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JOURNAL OF THE NORTH-CHINA BRANCH OF THE ROYAL ASIATIC SOCIETY VOLUME LIII—1922

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BYE-LAWS RELATING TO COMMUNICATIONS TO THE SOCIETY

1. Every paper which it is proposed to communicate to the Society shall be forwarded to the Hon. Secretary for the approval of the Council.

2. When the Council shall have accepted a paper, they shall decide whether it shall be read before the Society and published in the Journal, or read only and not published, or published only and not read. The Council's decision shall in each case be communicated to the author after the meeting.

3. The Council may permit a paper written by a non-member to be read and, if approved, published.

4. In the absence of the author, a paper may be read by any member of the Society appointed by the Chairman or nominated by the author.

5. No paper read before the Society shall be published elsewhere than in the Journal, without the permission of the Council, or unless the Council decide against publishing it in the Journal.

6. All communications intended for publication by the Society shall be clearly written, on one side of the paper only, with proper references, and in all respects in fit condition for being at once placed in the printers' hands.

7. The authors of papers and contributors to the Journal are solely responsible for the facts stated and opinions expressed in their communications.

8. In order to insure a correct report, the Council request that each paper be accompanied by a short abstract for newspaper publication.

9. The author of any paper which the Council has decided to publish will be presented with twenty-five copies : and he shall be permitted to have extra copies printed on making application to the Hon. Secretary at the time of forwarding the paper, and on paying the cost of such copies.

ERRATA.

| | |
|--------------------|---|
| Page 5, Line 35. | <i>Read India for Inadia</i> |
| Page 7, Line 35. | <i>Read curator for curaotr</i> |
| Page 16, Line 40. | <i>Read should for shold</i> |
| Page 16, Line 44. | <i>Read closely for closly</i> |
| Page 18, Line 36. | <i>Read bullheads for bullheds</i> |
| Page 35, Line 30. | <i>Read Prophecy for Prophecy</i> |
| Page 61, | <i>Read Szech'wan for Szechewan and so throughout the article</i> |
| Page 83, Line 33. | <i>Read unanimity for unaninimity</i> |
| Page 83, Line 38. | <i>Read ch'hih for chih</i> |
| Page 268, Line 29. | <i>Read preceded for preceeded</i> |
| Page 270, Line 1. | <i>Read one for on</i> |
| Page 272, Line 32. | <i>Read such as trade for such trade</i> |
| Page 273, Line 27. | <i>Read employment for emploment</i> |
| Page 273, Line 36. | <i>Read salvation for salavation</i> |
| Page 280, Line 40. | <i>Read confined for confirmed</i> |
| Page 281, Line 18. | <i>Read metempsychosis for metemsyschosis</i> |
| Page 281, Line 33. | <i>Read are far from Asiatic for are from Asatic</i> |
| Page 281, Line 41. | <i>Read summing for suming</i> |
| Page 283, Line 15. | <i>Read influence for Influence</i> |

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Application for Membership, stating the Name (in full), Nationality, Profession and Address of Applicants, should be forwarded to "The Secretary, North-China Branch of the Royal Asiatic Society, Shanghai." The name should be proposed and seconded by members of the Society, but where circumstances prevent the observance of this Rule, the Council is prepared to consider applications with such references as may be given. *Remittances of Subscription for Membership (\$5 per annum, which entitles the Member to a complete annual set of the Journal for the year in which payment is made) should be addressed to "The Treasurer, North-China Branch of the Royal Asiatic Society, Shanghai."* A Member may acquire "Life Membership" by payment of a composition fee of \$50.

Editors and authors wishing to have their works reviewed in the *Journal of the North-China Branch of the Royal Asiatic Society* are requested to send *two* copies to the Editor of the Journal, one copy being presented to the reviewer, the other remaining in the Society's Library. Papers intended for the Journal should be sent to the Editor.

It has been decided by the Council that the Society's publications shall not for the future be issued to any Member whose Subscription is one year in arrear.

It is requested that Subscriptions be sent to the Treasurer at the beginning of each year. Forms for payments may be obtained from the Secretary, by which members having a Bank account in Shanghai, can authorize a Bank to make the necessary payment at the appointed time every year. This is a great convenience to members, and to the Honorary Officers of the Society.

For information in connexion with the publishing department, Messrs. KELLY AND WALSH, LIMITED, Shanghai, should be addressed.

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JOURNAL
OF THE
NORTH-CHINA BRANCH
OF THE
ROYAL ASIATIC SOCIETY
FOR THE YEAR 1922
VOL. LIII.

SHANGHAI:
KELLY & WALSH, LIMITED
1922.

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| | |
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VOL. LIII.—1922.

EDITED BY EVAN MORGAN.

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PROCEEDINGS

ANNUAL GENERAL MEETING

The Annual General Meeting of the Society was held on June 22nd, 1922, at the Society's Hall, Dr. A. P. Parker, being in the Chair.

In opening the Meeting, Dr. A. P. Parker said:—Ladies and Gentlemen, In opening this Meeting to-day I have to refer to the great loss which this Society has suffered through the death of its President, Sir Everard Fraser, K.C.M.G., and of one of its Vice-Presidents, Mr. Samuel Couling. On the death of Sir Everard Fraser, the following Minute was made on the Records of the Council Meeting of March 30:—

Before proceeding with the ordinary business of the meeting the Chairman referred to the very serious loss the Society had suffered through the death of its President, Sir Everard Fraser K.C.M.G., H.B.M. Consul General. Sir Everard had been President of the Society for a number of years, and his knowledge of the Chinese language, his ripe experience and his great scholarship made him an ideal Chairman at its meetings. All who knew him esteemed his great ability, his remarkable character and charming personality. He suggested that an expression of the Council's deep sorrow should be recorded on the Minutes and a copy sent to Lady Fraser. This resolution was carried unanimously.

A similar Minute has just been recorded by the Council in connexion with the death of Mr. Samuel Couling. There was a striking similarity between the characters of these two fine men. Both of them were studious, earnest men, of strong personality and high ideals. Both of them were men of ripe scholarship and had made a life-long study of the Chinese language and literature. Both of them were of a reserved and retiring disposition, hating all that was show and ostentation. Both of them finally stuck to their work doggedly to the end, supporting with great patience and fortitude the physical afflictions which were destined finally to bring them to their graves. This double loss is a severe blow to the Society and to the cause of scholarship.

Far Eastern Literature.

Mrs. F. Ayscough read her 14th report as Honorary Librarian of the Society, as follows:

During my absence in the early part of the past year, Mrs. Cecil Maguire performed the duties of Hon. Librarian most energetically. She wrote to many authors and publishers, placing the needs of the Society before them, and the result was a very handsome contribution in the way of books. At this same time Mr. Mason, our last Hon. Secretary, was at home and managed to pick up a good many second-hand books which he bought for the Library.

It is, however, very difficult for any Society, which must of necessity keep its desires within the limits of its purse, to buy all the new and valuable publications appearing so frequently at present.

The ever growing interest shown throughout the world in the history, literature, art, fauna and flora, to say nothing of the trade and commercial development of China is responsible for the publication of many beautiful books, books which fill the soul of a Librarian with envy. They all seem most important, they all *are* very expensive, and the sum-total of \$5 subscriptions collected annually by our Hon. Treasurer is pitifully small. Add to the fact that the new books are beautiful and costly, the even more harrowing fact that the old books are rare and keenly competed for, and it is easily understood that the post of a Librarian to a "learned Society" is not an enviable one.

There is, however, another side to the picture. These sad facts in themselves prove that more and more people are trying to unravel the Far Eastern problems, and in order to accomplish this feat are turning to the silent friends who line our shelves. The great question is how to increase the number of these friends and how to afford them more spacious quarters so that the message they have to give can reach a larger audience.

The "Far East" is no longer the hobby of a few sinologists. Popular opinion the world over is waking to the fact that this era of intercommunication is creating relationships of interdependence unthought of a few years ago. In order that this interdependence may prove itself intelligent in character, it is necessary that the documents—the life histories of nations, be available for mutual study. The North China Branch of the Royal Asiatic Society is doing its best to collect the documents dealing with its own special province—

the Far East, but it is impossible for it to accomplish a tenth part of its task if writers and publishers do not remember that the library at 5 Museum Road is the natural repository for books on China, a repository where publications sent will come to the notice of serious students of "Things Chinese."

While fully conscious of the numerous short-comings, and the serious lacunae of the Society's shelves the Librarian feels that she can assure members of the N.C.B.R.A.S. that they possess one of the finest collections extant of books on Far Eastern subjects. She would also point out that great improvements are possible; and that these improvements it is incumbent upon the members to *make* possible.

It is with regret that I must report Mrs. Maguire's inability to continue her work in the library, work for which all members should be very grateful to her. I am happy to say, however, that Miss Couling has just consented to fill the post of Assistant Librarian, and I am sure she will do very well.

The staff has remained unchanged, and Mr. Woo and Mr. Chao have proved themselves, as always, helpful to the increasing number of visitors who use the Library.

Museum Developments.

In the capacity of acting Honorary Curator, Mr. A. D. Blackburn read the follow report by Dr. C. Noel Davis:—

During the year of Dr. Stanley's absence, on leave, in England, the Museum has been maintained in the excellent condition in which he felt it. Before going, he presented his own private collection of reptiles and amphibians, and now that his retirement from China is definitely announced, it is fitting that a special letter of thanks and appreciation of his great services be sent to him, with wishes for many more years of good health and happiness.

The Society has been peculiarly fortunate in having the voluntary services of Mr. A. de C. Sowerby, the distinguished naturalist and explorer, in the running of its zoological department. In the work of naming and classifying the very numerous and valuable specimens, many of which are almost unique, his knowledge was of the greatest help.

He has kindly lent his own collection of fishes from all parts of China, representing over a hundred different species, and this is now on view.

Fishes have not been well represented in the past, and efforts are now being made to get together a good collection.

Mr. A. M. Preston, with his special knowledge of ichthyology, has kindly consented to give his services to this department.

It is the aim of the Society to make the Museum a good working one, and to keep it up to a high standard worthy of so great and important a city as Shanghai.

The expert knowledge and unflagging enthusiasm of Mr. Sowerby are the greatest possible help towards the realization of this aim.

A Chinese assistant, one of the well-known Foochow family of collectors, Tang, has been permanently engaged; he is being trained to look after the Museum and any specimens that may be presented by people interested in the work.

A number of specimens in alcohol which were found to be deteriorating have been transferred into 5 per cent. watery solution of formalin. This is a cheaper and more effective preservative than alcohol, and will be used in future on Mr. Sowerby's advice.

The Museum has been well patronized by both foreigners and Chinese, and this indicates considerable public interest.

There is scope for further development in this branch of the Society's activities, and great need for a larger and more suitable Museum building. This can only be achieved through the practical interest and generous support of the community.

MUSEUM ACQUISITIONS

FROM JUNE 1, 1921—MAY 31, 1922.

| DESCRIPTION. | PRESENTED BY |
|---|--------------------------|
| A collection of fishes of China representing over 100 species (on loan) | A. de C. Sowerby, Esq. |
| Section of Giant Clam | |
| Shell—Korea. | |
| Snail Shell— <i>Conchostyla ventricosa</i> —Philippines. | |
| Stone axe Head, and 7 arrow-points—New York State 1917. | Peter Bahr Esq. |
| Miscellaneous birds eggs. | Carlos E. Remedios, Esq. |
| Iron Tile, from roof of Summit Temple on Mt. Omei. | L. Newton Hayes, Esq. |
| One pair fire-back pheasants—Kuangsi. | Purchased. |

C. NOEL DAVIS.

Acting Hon. Curator.

Editor's Report.

The Rev. Evan Morgan, honorary Editor of the Society's Journal, described the features to appear in the forthcoming number, which is to contain contributions of special scientific and literary interest. The editor particularly thanked Mr. R. D. Abraham for editorial assistance during the past two years.

Treasurer's Report.

Mr. A. D. Blackburn presented the statement of accounts, which showed a credit balance at the beginning of the year amounting to \$1,887, receipts totalling \$7,500, and a credit balance of \$2,016. The principal items of expenditure were \$1,241 for the Journal and \$1,046 for the library.

Secretary's Report.

The Council has met seven times, and six public meetings of the Society have been held during the Session, at which Papers and Lectures given were as follows:

"New Transations of Ancient Chinese Poetry" by Mrs. Ayscough (November 23, 1921).

"The Natural History of China" by Mr. A. de C. Sowerby (January 5, 1922).

"Some Impressions from Sianfu, the Ancient Capital of China" by Dr. Osvald Sirén, Ph. D. (January 19, 1922).

"The Growth of the Yangtze Delta" by Mr. H. von Heidenstam, c.E. (March 30, 1922).

"Modern Travel from Taiyuanfu via Mount Wu Tai to the Mongolian Frontier" by Mr. E. S. Fischer (April 18, 1922).

"Chinese Buddhist Pilgrims" by Rev. E. H. Cressy (April 27, 1922).

The membership shows a small increase, 70 new members having been elected, the names being: S. H. Lewis, Dr. H. J. Mullett, Geo. Crofts, Rev. Thos. Cook, Rev. Thos. Torrance, Mark E. Botham, E. L. Allen, E. B. Heaton-Smith, Columbia University, Mrs. Perrin, Mrs. de Linde, Prof. W. B. Nance, P. J. McCabe, Miss Emily Davis, Mrs. Z. S. Freeman, T. Shioya, Osvald Sirén, W. E. Hughes, J. J. Peterson, Capt. G. Mulock, R.N., G. L. Wilson, A. Norman Wilson, A. Martinella, N. W. Hickling, J. F. Brennan, G. A. Pasquire, A. McL. Duncan, A.R.I.B.A., etc., Pablo Tirzon, Oswald W. Darch, Lt. H. R. Hancox, R.N., Mrs. Munthe, Mrs. J. J. Brennerman, John H. Lofting, K. E. Allan, Charles Gerken, O. Meister, c.E., M.E., A. B. Campbell, A. B. Lowson, J. E. Jacobs, T. B. Clark, F. Dumon, B. Hemingway, Rev. G. M. Franck, Mrs. W. Mortimore, M.D., Rev. H. Liversidge, E. H. Hume, M.D., Rev. W. J. Hail, Ph.D., O. Mamet, E. Mostaert, G. de Saint-Hubert, Count Sadoine, Shantung Christian University Library, India Office Library, Cornell University Library, F. Ramondino, Walter H. Taylor, George G. Helde, Paymaster Commr. E. T. M. Green, R.N., C. W. Harvey, V. Chieri, Rev. Wm. Munn, Hugo Sandor, Rev. A. H. Wilkinson, B.A., B.D., Literary Department, American Women's Club, Miss Dumsden, F.R.G.S., Dr. J. H. Jordan, M.C., Miss Couling, Ch. Grosbois, M.A., Mrs. Enders, Dr. M. Pfister.

Thirteen resignations have been accepted and three deaths recorded, including those of our President Sir E. H. Fraser, K.C.M.G., and one of our Vice-Presidents Mr. Samuel

Couling. The membership now stands at 582, of whom almost exactly half are resident in Shanghai. Probably 40 names will have to be struck off at the end of the year, as the members in question have not paid up their subscriptions for three years and presumably have no intention of doing so. I would like to remind members that prompt payment of annual dues would greatly assist the Honorary Treasure and the Honorary Secretary. There are at present no less than 178 members who have not paid their annual dues for 1922. This is not as it should be.

The finances of the Society are satisfactory, the cash balance to the credit of the Society in the Hongkong and Shanghai Bank at the end of May being just over \$2,000, in addition to which we hold Municipal and other debentures to a face value of Tls. 2,700. These form a Life Membership Reserve, and bring us in an annual income equal to the annual dues of 48 ordinary members.

The amount spent on the building has been comparatively small, but it will be considerably larger this year owing to the damp proofing which is about to be undertaken.

The reports were passed, on the proposal of Mr. A. McL. Duncan, F.S.A., seconded by Miss Bosworth, and the officers whose names have been circulated to members were elected.

The Meeting closed with a vote of thanks to the Officers of the Society for their very able work during the past year.

Election of Officers.

The following Officers and Members of the Council were elected for the coming year:—

President—S. Barton, Esq., C.M.G.; Vice-Presidents—Rev. F. L. Hawks Pott, D.D., Rev. A. P. Parker, D.D.; Curator of Museum—C. Noel Davis, M.D.; Librarian—Mrs. F. Ayscough; Assistant Librarian—Miss Couling; Honorary Treasurer—A. B. Lowson, Esq.; Editor of Journal—Rev. Evan Morgan; Councillors—H.E. V. Grosse, H. A. Wilden, Esq., C. Kliene, Esq., R. D. Abraham, Esq., C. Harpur, Esq., E. W. Mead, Esq.; Honorary Secretary—A. D. Blackburn, Esq.

THE NATURAL HISTORY OF CHINA.

ARTHUR DE CARLE SOWERBY, F.R.G.S., F.Z.S.

The subject we have before us is a very big one, far too big for anything approaching justice to be done to it in the time at our disposal. It may even be argued that the time is not ripe for anyone to attempt to deal with the Natural History of China as a whole, that our knowledge of the subject is still too fragmentary, that it is both unsafe and unwise to try and form any far reaching theories as to the origin, distribution, past and present, and the present status of the animals that inhabit this part of the great Asiatic land mass; in short, that a great deal more research work has to be done, both in the field and laboratory, before a general survey of the fauna of this ancient land can be brought within the compass of a single discussion.

This, to a certain extent, is true, for there undoubtedly remains a vast amount of work to be done in China before it may be said that even the vertebrates are all known, while a much greater time must elapse before the invertebrate fauna has been thoroughly explored. Nevertheless it is utterly erroneous, not to say unfair to past workers in this wide field of research, to say, as has been done recently, that the Natural History of China is practically unknown. It is true that in certain groups of animals, for the most part orders or families of invertebrates, the Chinese representatives are unknown, but our knowledge of others, birds for instance, is actually nearing completion, and it is hoped to show here that this knowledge, coupled with what we know of the faunas of other countries and their distribution throughout the ages, is amply sufficient to enable us to draw conclusions and put forward theories, tentative though they be, in regard to that of China.

China is a very big country and comprises within her boundaries a very varied topography and many kinds of climates. In the west mighty mountains rise to heights far above the snow line; in the north-east lie immense alluvial plains; in the south and south-east the country is all broken up by irregular systems of hills and low mountains. Mighty river traverse the land from end to end, cutting through

mountain ranges to form deep gorges, or widening their beds to form great valleys. In the north a temperate climate prevails, a warm summer being followed by a bitterly cold winter, while in the south tropical conditions are met with. The climate of the north may be characterized as dry, that of Central China as humid, that of the south-west as distinctly wet. The result of all this is the presence of an extremely varied fauna, not only in regard to the species and genera of the families and orders represented, but in those families and orders themselves.

Another factor which helps to bring about this wonderful variety in the fauna of China is the age of the country. It is customary, when discussing the Chinese, to credit them with a very ancient civilization, but geologists tell us that the antiquity of China's civilization pales into insignificance as a world wonder when compared with that of her rock formations. It is not meant to suggest by this that the animals found in the ancient rocks have survived to the present time, but that in China we find animals still living that belong to very old groups. Even in the case of warm-blooded vertebrates, which, geologically speaking, are very recent, we find species belonging to a bygone age, an age that we call prehistoric. We find animals that belong to an age when man used only stone implements, and lived in cave shelters, the Paleolithic age. Such animals have only survived in these regions by taking shelter in the highest mountain ranges. The famous takin (*Budorcas*) is one of these, the giant panda, or cat-bear (*Ailuropus melanoleucus*) another. The lagomorphs—pikas and hares—belong to this group, as also do certain of the rodents, such as the allactaga, or jumping rat, and some of the voles.

Thus it has become customary for naturalists in the museums of Europe and America to look for and expect all kinds of remarkable forms of animals from China, and, periodically, some such animal is discovered. This happens in all branches of animal life. A typical example is that of two species of flea. A rat was caught somewhere in South China, and it was found to contain specimens of a peculiar jigger flea in its ears. These specimens were lost, and never again have similar ones been found. Quite by accident some white maggot-like creatures were found in the nostrils of a roedeer that I shot while on the Clark Expedition in Shensi. These were kept, and later were examined at the British Museum, when it was found that they were enormously swollen females of a small black flea that infested the coat of the deer upon which they were

found. The species has not since been secured. Other peculiar Chinese animals will be mentioned later: for the present let us continue for a moment to consider the palaeontological side of our subject, since this bears so strongly upon the present distribution of the animals of China.

It may be taken that a fair amount is known about the fossils that occur in the older formations, since several able palaeontologists have been devoting their time to this branch of study. A geological museum has been started in Peking, as well as a geological survey of the whole of China, and already a considerable amount of valuable material upon which experts are now working has been gathered. It is the more recent formations, however, that most interest us here, since it is from them that we may find out when the animals we now know to exist in the country arrived there, and also what forms immediately preceded them. Unfortunately these recent deposits have not as yet been well worked or explored, though some interesting results have already been obtained. Thus we learn that the porcupine, now not known to occur north of the Yangtse Valley, once inhabited the province of Chihli, numerous remains of the animal having been found in recent deposits round Peking. Such a discovery is significant, for it shows that at no very distant date, geologically speaking, that part of China had a very much warmer climate than it has now. Couple with this fact my recent discovery in the Imperial Hunting Grounds of North-eastern Chihli, of a species of squirrel (*Tamias*), which belongs to a genus that does not occur elsewhere in China north of Ssuehuan in the west and Chekiang in the east, and it becomes obvious that the forests of West, Central, South-west, and North-east China were at one time connected, a belt of heavy vegetation and trees probably extending right the way from Indo-China to the borders of Manchuria.

While exploring in Manchuria, I secured a specimen of a large bear that could not be classed either with the brown or the black bears of Asia. It was undoubtedly a grizzly, but up to that time the living grizzlies were supposed to be confined to North America. I was able to show that this bear was indeed a true grizzly, and also that there were other grizzlies in Asia. This very clearly shows how the grizzlies came to be present in North America, for these Asiatic forms are undoubtedly connecting links between the prehistoric grizzlies or cave bears of England and Western Europe, which became extinct only after the fourth glacia-

tion, and the living grizzlies of North America. The only way in which the latter could have acquired their present distribution was by the migration or, perhaps it would be better to say, the gradual spread, of their ancestors from Europe across Siberia or Central Asia to the American continent by way of the land bridge that once existed where the Bering Sea now lies.

This land bridge was a very important factor in the present distribution of the animals of both America and the Eurasian land mass. By its means such animals as the camel and the horse, both of which first developed in North America, and subsequently became extinct in that continent, arrived in Asia, the horse passing on to Europe, where it became the servant of man, and was subsequently re-introduced into America by him.

When we come to examine the distribution of the cold blooded vertebrates, such as reptiles and fishes, we have to go further back in the geological history of the country in order to understand its significance, and it is here that our want of knowledge is most keenly felt. Nevertheless, a few interesting facts may be culled from what we already know, facts which throw a certain amount of light upon the subject.

An examination of the map of the Old World will reveal the fact that a desert belt stretches from Morocco in North Africa right across Asia to the borders of Manchuria, where it stops within a hundred miles or so of the sea. It has been suggested that it was this desert belt, known to be of considerable age, that prevented the *Urodela*, or tailed amphibians, from spreading south from Europe and North Asia into Africa and India. Force is given to this contention by the fact that it is only in the extreme eastern part of their range in Eurasia that they occur south of the desert belt in question, for there they found a stretch of humid country by means of which they could spread southward with safety. It is easy to see how such animals as newts and salamanders, which depend entirely upon the presence of ponds, streams, or lakes, wherein to lay their eggs and where their young develop, and which themselves cannot exist in any but a humid environment, would find it utterly impossible to cross a stretch of dry, sandy desert.

Incidentally it may be mentioned that another animal that appears to have been influenced in its distribution by this desert belt is the roedeer (*Capreolus*), whose range extends from the extreme west of Europe throughout that continent, Central Asia, north of the deserts, and Siberia

into Manchuria. Thence it turns south and west, extending into North China and on into Eastern Tibet. This deer does not occur in Central or South China, its range being bounded in this direction by the Tsing Ling Mountains.

Reptiles represent a very old group of animals. One instance in connection with their ancestry and distribution may be mentioned here. It is that of the little Yangtse alligator. The *Crocodylidae* represent almost the very oldest living group of reptiles, and they acquired their distribution upon the face of the earth a very long time ago. It is believed that they originated in the Old World, spreading into the New World at a very remote period. These New World members of the group are all alligators or caimans, no true crocodiles being found in American waters. Since, however, there is an alligator to be found in the Old World, that from the Yangtse, it is obvious that at one time this genus enjoyed a very wide distribution in both the Old and the New Worlds, and that in some way the Old and the New Worlds were connected at that time.

Palaeontology has proved of the utmost assistance in determining how the distribution of fishes, both marine and fresh-water, came about, though as yet nothing very important in the way of fossil remains of this type of cold-blooded vertebrate has been found in Chinese strata. Nevertheless, it is believed that China formed a centre of dispersal for the great carp family (*Cyprinidae*), receiving at the same time an influx of Silurids, or cat-fishes, from the region of the Indian Ocean.

We may next consider for a while the question of the faunistic areas that occur in China, or to which parts of China belong. Many years ago a distinguished naturalist divided the globe up into great faunistic regions such as the palaearctic, including practically the whole of Europe, and Central and Northern Asia, the Ethiopian, including Africa south of the Sahara, the Oriental, including India and Malay, and the Neartic, including North America. Since that time it has become customary to go on dividing up these regions into subregions or faunistic provinces, often, it must be admitted, with but poor success. Notwithstanding this fact, we may make some such attempt in the case of China, for, even if certain groups of animals are not amenable to such a treatment, others undoubtedly are, and it will greatly assist us in our examination of the Chinese animals if we can discover the presence of such faunistic areas.

As a matter of fact the task is not a difficult one, for some very striking faunistic barriers occur in China. One

of these is the great Tsing Ling Divide that extends from the highlands of the Tibetan border through Southern Kansu, and Southern Shensi into Honan. North of this divide we have one group of animals, south of it another. It forms the boundary line of the ranges of a large number of both mammals and reptiles. For instance, we have already seen how it marks the southerly limits of the range of the roedeer. At the same time it forms the northerly limit of the range of the muntjac, another small deer, and the porcupine. To the north of it the animals are Tartarian in their affinities, to the south they are Oriental. In the provinces of Kansu, North Shensi, Shansi, Chihli, and Fengtien, the westernmost province of Manchuria, we find such animals as the allactaga, the suslik, the gazelle, the wild sheep, animals which denote the intrusion of a Steppe fauna. At the same time we have the roedeer, the wapiti, or reddeer, the wild boar, and the fur-squirrel, which suggest a forest fauna, and connect this part of the country, faunistically, with Europe by way of Manchuria and Siberia.

Central China, which may be taken as coinciding roughly with the basin of the Yangtsekiang, is again characterized by the presence of certain forms, while when we come to the extreme south we find typically Indian or Malayan animals appearing. The animals of Central China seem to have spread eastward and northward to a certain extent, which accounts for an intrusion of Oriental species into Manchuria, as for instance the black bear and the sika deer. These may, however, have arrived in Manchuria from South China by way of the low-lying coastal provinces of the east. In any case we are fairly safe in dividing China up into three main faunistic areas, North, Central, and South, noting that the northern animals are partially Tartarian, or Mongolian, the animals of Central China being typically Chinese, and those of the south being partially Indian or Malayan. And there we may leave the matter, since nothing is to be gained by stressing the point too far.

Before making a rapid survey of the more prominent and interesting orders, families, genera and species of animals occurring in China it would be well to consider briefly the work done upon our subject by past field naturalists, experts in the museums of Europe and America, and others, at the same time taking note of the literature that is extant. The names of men like P  re David, a Jesuit missionary who travelled over a great part of China studying the fauna and making collections which were sent to the Paris Museum, and Robert Swinhoe, a British consul who also was a keen

student and collector, stand foremost in the annals of the zoology of this country. David's material was worked out, as regards the mammals, by Milne-Edwards, the results being published in a fine tome called "*Recherches sur les Mammi-feres*," and, as regards the birds, by himself and Oustalet in their "*Les Oiseaux de la Chine*." Swinhoe's writings appeared for the most part in the *Ibis*, the organ of the British Ornithologists' Union, sometimes in the *Proceedings of the Zoological Society of London*. Since their time very little sound work was done upon the mammals till about the year 1907, when Mr. Malcolm P. Anderson, working for the British Museum, came to China and commenced a series of explorations, making magnificent collections, which were worked out by Mr. Oldfield Thomas of that institution, who published numerous papers in the *P.Z.S.* and the *Annals and Magazine of Natural History*. The birds, on the other hand, have claimed many devoted students, amongst the most famous of whom are C. B. Rickett, J. D. de La Touche, and F. W. Styan. These ornithologists have contributed very considerably to our knowledge of the birds of China, their published papers appearing usually either in the *Ibis* or the *Bulletin of the British Ornithologists' Club*.

A naturalist whose name must be mentioned was P  re P. M. Heude, founder and first curator of the Zikawei Museum of Natural History. He managed to get together a very fine collection of Chinese animals, and published extensively upon the material that he gathered round him in the museum. Unfortunately he entertained somewhat peculiar views upon what constitutes a species, which led him to describe an enormous number of new forms on grounds that no modern naturalist can accept. Thus the value of his writings was seriously impaired, though the fine series of specimens in the museum remain a monument to his zeal as a curator and collector. His principal publication was his "*Memoires concernant l'Histoire Naturelle de l'Empire Chinois*," and he dealt mainly with mammals, though birds, certain reptiles, and certain freshwater mollusks were also touched upon.

As regards the cold-blooded vertebrates of China the most important names are those of G. A. Boulenger and C. Tate Regan of the British Museum and L. Stejneger of the United States National Museum, whose writings upon the fresh-water fish, amphibians, and reptiles are to be found scattered through numerous scientific journals. The earlier workers upon the reptiles and batrachians were

Cantor and Günther, and upon the fishes Günther, Valenciennes, Bleeker, Basilewsky and Richardson.

Besides all these naturalists there are a great number who have contributed to the literature upon the zoology of China, but it is impossible here to give all their names, or even an adequate idea of the vastness of that literature. A partial bibliography of the ornithology of China, which Dr. Richmond of the United States National Museum very kindly prepared at my request, contains the titles of over seven hundred publications, which are scattered throughout numerous journals, or have appeared in book form. It is almost certain that no library in the world contains a complete set of all the publications upon the fauna of China, though that of the Natural History Museum at South Kensington (British Museum) is remarkably replete with this form of literature. The libraries in China, alas, contain very little in this line, far too little to enable anything serious in the way of research work to be done. The Geological Department in Peking is trying to form a good working library, while the Zikawei Museum has a fairly useful one. The library of the late Dr. G. E. Morrison of Peking contained a good collection of zoological works on China, but it was sold and taken away to Japan. This lack of the literature upon the subject is a very serious handicap to anyone trying to do original research in the country, while another serious handicap is the lack of collected material in the way of good series of properly labelled specimens for purposes of comparison. I should like to see an awakening of the interests of the members of the Royal Asiatic Society (North-China Branch) in regard to this matter, for this institution is obviously the one to lead the way, in this part of China at least, in the study of the zoology of the country, and all that is needed are adequate funds for the purchase of books and papers and to send collectors out into the field to gather more material. The society's museum already has a considerable amount of valuable material, but much more is needed before it can be considered as a genuine working museum rather than a show place.

MAMMALS.

The *Mammalia* of China is a comparatively large and varied one. It contains representatives of numerous families and genera, some of them unique, and most of them extremely interesting. Probably the great order *Rodentia* is most fully represented, though the *Carnivora* are extremely abundant, especially in some localities. The *Ungulata*, or

hoofed animals, on the other hand are less plentiful, a fact due doubtless to their value as food. The Chinese are not to be classed amongst the world's best hunters, but by reason of their numbers, and the fact that they never lose an opportunity to turn an honest penny, they soon destroy the big game in any district where such occur and they are allowed to hunt it. At the present time it is only in remote mountainous areas, more or less inaccessible to the outside world, that any of the larger ungulates are to be found in a wild state, and even these are being assiduously hunted by local natives, who are gradually acquiring modern rifles, and so threatening them with extermination. To this category belong the wapiti, or Asiatic reddeer, several forms of which occur in the country, the wild sheep, the takin, the serow, the sika deer, and the goral. The large deer are hunted for the sake of their horns when in velvet, the Chinese believing in this commodity as an excellent tonic and rejuvenater. Thus the spotted deer, or sika, have become extremely rare, and are now only to be found in a few isolated areas. The sika deer form an interesting genus that is confined to the south-eastern part of the Asiatic land mass and adjacent islands. There are two distinct sub-groups within the genus, one containing the large animals of North China and Manchuria, and the other small animals, typified by the little Japanese deer. In the extreme south-west of China we find an Indian form of deer, the sambhur, while in the Yangtse Valley occurs the remarkable little river deer (*Hydropotes inermis*), which has no horns, but well developed tusks in the male. Muntjacs, musk, mousedeer, and roedeer complete the list of cervine ungulates that occur in China, the roe being confined to the north, the musk to the north and west, and the others to the central and southern parts. The famous David's deer (*Elaphurus davidianus*), known to the Chinese as the *Mei*, or *Ssu-pu-hsiang*, meaning the "four unlikes," has become extinct, at least in a wild state. This and the river deer are purely Chinese forms, the wapiti being European and North American in its affinities, the musk Himalayan, and the sika, the muntjacs, and the mousedeer oriental.

Wild swine of the *Sus scrofa* type are almost universally distributed throughout the country. Antelopes and wild sheep belong to the north, the serows and gorals to the highlands, where such occur, and the takins to highest mountain ranges of Central and West China. The yak occurs in a wild state in the highlands on the Tibetan border, and the wild ass in Chinese Turkestan.

The *Carnivora* are represented by several important groups, namely, the *Ursidae*, or bears; the *Canidae*, wolves, foxes, and dogs; the *Mustelidae*, or weasels and their relations; and the *Felidae*, or cats. It would be interesting to follow out the various branches of this order, but neither time nor space will permit of it. Sufficient it is to note that in this group of mammals, as in the last, China possesses some remarkable forms all her own. Such an animal is the great panda, or cat bear (*Ailuropus melanoleucus*) of the Tibetan borders. The small panda (*Ailurus fulgens*) is another. The tiger was at one time, as the leopard is to-day, almost universally distributed, but now it is only rarely found in the north and central regions, though one form is common in the south and south-east, while the Manchurian forests contain numbers of the great woolly tiger. Small cats and civets are extremely abundant in the south-east, less so in other parts.

Of the Chinese rodents the most interesting are some of the voles and their not very distant relations the molerats (*Myospalax*) and the bamboo rat (*Rhisomys*). It is perfectly obvious from a comparison of the two forms that the molerat is a development from the bamboo rat, it having carried the specializations of the latter for a subterranean life a considerable step further. The bamboo rat, living in the dense bamboo jungle where it burrows for its food, the roots and shoots of the bamboo, frequently stays above ground since it is well protected by the heavy vegetation. The molerat, on the other hand, having pushed northward, where vegetation is very much more scarce, has been forced to become almost exclusively subterranean in its habits and mode of life, and thus has become even more mole-like than the bamboo rat, developing larger burrowing claws in the forepaws, and almost losing the external ear and the eye. In Central, South, and West China all kinds of rats, more or less related to the common rat, predominate, but in the north we have an intrusion of Mongolian or Steppe forms, such as the jumping rats, *Dipus* and *Allactaga*, the gerbils (*Meriones*), and the ground squirrel (*Citellus*). Here also are to be found the various members of the hamster family, rats characterized by the presence of large cheekpouches. Squirrels are universally distributed, characteristic forms being the huge flying squirrels, David's squirrel, the fur squirrels, and the chipmunks. The largest rodent in the country is the porcupine (*Hystrix*), which occurs throughout the Yangtse Valley and in South and West China.

Closely related to the rodents are the lagomorphs, or hares and pikas. These used to be classed with the rodents, but are now looked upon as belonging to a different order, whose development was, nevertheless, closely parallel. There are numerous subspecies of the common hare (*Lepus swinhoei*) in China north of the Yangtse. South of that river occurs a totally different animal, namely the Chinese hare (*L. sinensis*). This is a rather unique distribution and division of habitats, since the rim of the Yangtse basin and not the river itself usually forms the boundary line between the ranges of any two forms of animal in China. Apparently the Yangtse River has proved sufficient of a barrier to keep the one form to the south and the other to the north, and this in spite of the fact that hares are well known to be expert swimmers.

The pikas (*Ochotona*) are really small hares or rabbits, and they are confined to the north and the higher regions of the centre and west. Strangely enough they occur on the flat plains of Mongolia, in the lowest ravines of Shensi and Kansu, in the forested areas of Shansi, and also at the very summits of the highest mountain ranges. This is evidently because they belong to a very old group of mammals, and so have had a long period in the country in which to spread and adapt themselves to all kinds of environment. They once inhabited Europe, but became extinct there along with all the other "steppe" animals. Now they are confined to certain parts of Asia and North America.

The bats and insectivores are two other groups of mammal that are well represented in China, some very remarkable forms of the latter occurring in the west. In the north hedgehogs and shrews are fairly common, as also are certain forms of mole. One of the most interesting of the Chinese insectivores is the peculiar *Neotetracus sinensis* from the west, which combines the characters of the shrews and the hedgehogs.

Of apes and monkeys China does not boast a large number or variety, though it is interesting to note that the most northerly representatives of this great group of mammals in the world to-day are to be met with in this country. In the area to the north-east of Peking, known as the Tung Ling, the fine Chihli macaque still occurs. In Ssuchuan the famous golden-haired monkey (*Rhinopithecus roxellanae*), one of the only two known monkeys that possesses a nasal appendage, is found. This is a very large animal with a long tail and sometimes a long main of golden hair down

the back. In the south-west of Yunnan, on the Burmese border, several species of ape and monkey occur, while in the south and south-east others are to be met with.

While discussing the mammals mention should be made of the remarkable scaled ant-eater (*Manis*), also called the pangolin. This creature is highly valued for its supposed medicinal properties. In fact, in certain parts of China every wild animal that is at all uncommon is credited with medicinal properties, and fetch good prices in the market. Thus the blood of the serow is considered very valuable, as also are the blood, bones, and claws of a tiger, the horns of the serow and goral, and the antlers of the stag. The pangolin is confined to the south and south-east.

In the matter of marine mammals, the seas that wash the shores of China are not very rich. Sea lions and common seals occur round the coast, while various kinds of whales and dolphins are to be met with further from land. Some extremely interesting river dolphins occur in the waters of the Yangtse basin. Some of these have not yet been identified. Certain lake forms suggest that at one time this part of China was under the sea, the dolphins being left behind in lakes when elevation of the land took place.

BIRDS.

The birds of China are better known than any other branch of her fauna, apparently for the reason that they have attracted more attention from competent naturalists. It is probable that birds, insects, especially butterflies, and shell-bearing mollusks the world over have received more attention than other animals for the reason that they are more attractive. Whatever the cause the fact remains that there is little to be expected in the way of new species of birds to be discovered in this country, though a great deal of work still remains for the ornithologist to do. For instance, the problems of migration in this country have scarcely been studied as yet, while the exact ranges of the indigenous forms of bird that occur have yet to be determined. No country in the world offers a better field for research to the ornithologist than does China. This country is the headquarters of the great pheasant family, while its great variety of topography offers the opportunity of studying its avi-fauna under all kinds of conditions from open desert to dense forest, high mountain ranges to swamps and flat lands. Breeding operations may be watched, nesting haunts and conditions noted. Bird life is so

abundant that the student of nature need never be at a loss, unless it be through an *embarras de richesse*.

I have heard it stated that there are some twelve hundred descriptions of birds from China. Whether this be the case or not, it is probably not very wide of the mark to set the number of distinct forms known to occur in the country at well over six hundred. In a list of birds that are known to occur in Manchuria and the neighbouring region which I have prepared with the help of various experts there are some five hundred forms. Most of these occur at least in some part of China proper, and it is certain that the indigenous birds of the more westerly regions must number considerably over a hundred more.

The avi-fauna of China may be characterized as typically palaearctic with a strong intrusion of oriental species in the southern parts of the country. At the same time the palaearctic element may be further described as being Tartarian in its affinities in the north and north-west, and Himalayan in the highlands of the west and central areas. The importance of this Himalayan intrusion should not be overlooked, for it will often explain the remarkable occurrence of some species in an unexpected area. Botanists tell us that in the higher parts of this country the flora is often distinctly Himalayan, and this is to be explained by the fact that the Tsing Ling and other high mountain ranges of Central and West China are apparently offshoots of the great Himalayan massif. We thus find that faunistic areas or zones occur in a perpendicular direction as well as a horizontal one, a fact first pointed out, I think it was, by Elwes, an ornithologist of considerable repute in England.

As regards migrant species in China it may be pointed out that the country receives influxes of birds from India as well as the islands of the Indian-Pacific Oceans. Species that winter in the Philippines, for instance, are commonly found breeding in the mountains of North China. The whole of the China coast during the migration season forms an immense highway for transient visitors, which are on their way to Siberia to breed, and it is due to this fact that we know as much as we do about the number and kinds of birds that pass through China. It has been possible for observers who have been employed either in some European firm at the coast or in the Customs Service to devote their spare time to this fascinating subject, usually with very valuable results.

It is impossible here to go into details concerning the various families, genera, and species of birds to be met with

in the country. The subject is too vast. Besides it would be superfluous for there are numerous excellent lists of such birds extant, not to mention expansive works such as Gould's "Birds of Asia." The museum of this society contains a very fine collection of Chinese birds, and anyone wishing to take up the subject will find that the specimens have all been identified and labelled.

It has already been stated that China is the headquarters of the pheasant family, and if any one point more than another characterizes the avi-fauna of the country it is this. Perhaps another characteristic that may be mentioned here is the number and variety of the timeline birds—babblers, laughing thrushes, and the like—that occur. In the southern provinces we have such remarkable birds as the pheasant-cuckoos, crow-tits and trogons, nor should we neglect to mention the numerous and beautiful fly-catchers that inhabit this part of the earth.

The birds of North-east China, Corea, and Manchuria are remarkably similar to those of Europe and the British Isles, and a study of the subject reveals the fact that closely related forms, each grading into the next, occur all the way from Western Europe through Siberia to these easterly regions.

REPTILES.

In dealing with the reptiles and amphibians, or batrachians, of the country we are confronted with a rather remarkable fact. North of the Yangtse Valley these forms of animal life are very poorly represented, if not in numbers of individuals at least in variety of species, while south of it is there is a great abundance of both. The explanation is not far to seek, and it lies in the climatic conditions to be encountered in the two areas. These cold-blooded vertebrates are a weak remnant of great reptiles that lived in the days when the earth was much warmer than it is to-day, when the climate was far more humid and vegetation infinitely more luxurious and prevalent. Life for great saurians was comparatively easy, and so they did not evolve any means of protecting themselves against the less favourable conditions that followed the Carboniferous and Cretaceous periods of the earth's history. Their descendants survived, but, with the exception of the crocodiles and alligators, only as very small replicas of the great monsters that once swarmed. And these survivors can no more withstand severe climatic conditions than could their ancestors. Only a comparatively few reptiles have been able to adapt

themselves to a desert environment, and, even so, usually in warm countries. The bitter cold of the North China winter is too much for them. Similarly amphibians originated in the dense tropical jungles, swamps, and forests of the Carboniferous age, where their particular mode of reproduction and development from an egg laid in the water through an aquatic stage to a land animal was evolved. This they have retained, but they, too, have become greatly reduced in size and can only live where a congenial environment is to be found. Thus the dryness of the North China climate is inimicable to them. Central China, on the other hand, offers much more favourable conditions to both reptiles and amphibians, and so we have a corresponding increase in the number and variety of the species that occur there. But it is in South China that we find ideal conditions for the cold-blooded land vertebrates, and here these animals swarm. The museum of this society contains a very fine herpetological collection, thanks to the energy and enthusiasm of Dr. Arthur Stanley, the present curator. But it is interesting to note that the greater part of the collection was made in the province of Fukien, where semi-tropical conditions prevail, vegetation is extraordinarily thick, and plenty of permanent streams occur. In a valuable paper by Dr. Stanley upon the Chinese reptiles in the museum, some seventy two species are listed, of which forty nine have Fukien against their names. This does not mean that they are confined to that province, for specimens of many of them have been obtained elsewhere as well.

A glance at this list reveals the fact that of the various forms of reptiles represented in this country snakes predominate. Fifty one of the seventy two species listed are snakes. These snakes range from the monster python; a specimen of which from Fukien measures 20 feet, down to the tiny blind snake. The majority of the species are non-poisonous, but several very deadly forms occur. Amongst the latter are the black cobra, recorded from Chekiang and Fukien, and the terrible Chinese viper (*Ancistrodon acutus*), whose poison fangs are enormous. Other poisonous snakes occurring in our region are the sea snakes, which are actually to be found in the sea, and have become adapted to a marine pelagic existence by a lateral compression of the posterior part of the body and tail. The non-poisonous snakes are mostly what are called colubers—grass snakes, and water snakes—and are easily recognized by the usually slender bodies and heads.

Lizards of various kinds are fairly common, amongst the commonest in the north being the spotted lizard (*Eremias argus*) and the little gecko, the latter inhabiting the dwellings of man. In the south occur the blue-tailed skink (*Eumeces chinensis*) and its near relative the elegant skink (*E. elegans*). Another fairly common form is the long-tailed lizard (*Tachydromus septentrionalis*).

Of the turtle family China contains several forms, including the mud-turtle, some terrapins, and tortoises. Marine turtles are to be taken at times in the China seas, or are washed ashore occasionally on the southern coasts.

There is no need to do more than mention the little Yangtse alligator here, as we have already referred to it. The only other member of this family, the *Crocodylidae*, which occurs in China is the estuarine crocodile, which is to be found in the rivers of the extreme south. Its scientific name is *Crocodylus porosus*. The difference between the alligators and the crocodiles, externally, is twofold. The alligator has a much broader snout than the crocodile, while its fourth tooth from the front in the lower jaw fits into a pit in the upper jaw, that of the crocodile into a notch.

The amphibians in China are represented by numerous species of frogs and toads, or tailless batrachians, as they are usually called, as well as by a few newts and salamanders. The tailless batrachians greatly predominate, however. Remarkable forms are the little fire-bellied toads (*Bombina*), the little tree toads (*Hyla*), and the great tree-frog (*Rhacophorus*), which is as large as a good sized toad and has its long toes webbed and knobbed at the tips, thus enabling it to climb with agility. In the hills and mountains of Fukien and Chekiang a huge frog, not unlike a bullfrog, occurs amongst the damp rocks at the very summits of the ridges and peaks. Everywhere the edible frog, the smaller brown frogs, and the Asiatic common toad are to be found. In the north Radde's toad, a beautifully marked species is very common.

The commonest of the *Urodela*, or amphibians with tails, is the Chinese newt (*Diemictylus orientalis*). A very handsome spotted salamander also occurs.

Mention should be made of the remarkable giant salamander (*Megalobatrachus davidi*), which, with the Japanese form, *M. japonicus*, is the largest of the present day amphibians. This creature has been recorded from Central China, a closely related form occurring in the east. Both are very rare, at least in collections. The Japanese form is

more common, live specimens being frequently exhibited in collections in Europe and America.

FISHES.

The subject of the fish, marine and fresh-water, of China is one of extreme interest and importance. Its importance lies in the fact that the Chinese depend so largely upon fish to supply them with the necessary animal matter in their food. Of course the Chinese are not unique in this, but owing to the numerous fine water ways and large lakes that the country contains and her immense sea-board, with a resultant magnificent supply of fish food at hand, they have become fish-eaters, in places to the exclusion almost of any other kind of animal food. Thus the fishing industry of the country is of great importance, which in turn means that a thorough knowledge of her finny inhabitants is vital to the future welfare of her people. As a matter of fact the fishes of China are rather well known, though it is obvious that there are many new discoveries to be made in this branch of the country's zoology.

The marine fish of China, that is to say, those occurring in the China seas, are closely related to those of Japan, which means that they are well known, for the Japanese and American scientists have made a very thorough study of this subject. Many of the forms that are taken in China seas are of very wide distribution, others very local. The *Clupeidae*, or herring family is represented by a number of species, but it is not a very important group. The same may be said of the *Gadidae*, or cod family, and the *Pleuronectidae*, or flat fishes, families that are very important in the European and North American fisheries. The Perciforms, fishes that conform to the general characteristics of the perches, such as basses, maigres, rock-fishes, sea-breams, and the like, are of the utmost importance. One fish that should be specially mentioned is the hair-tail (*Trichiurus*), the long, silvery, ribbon-like fish that one sees so frequently for sale, either in the dried form or fresh, in China. It is taken some little distance out at sea, apparently in large numbers, and is a great favourite with the Chinese. As one works northward along the east coast of Corea towards that of the Primorsk and the Okhotsk Sea the marine fish fauna undergoes a profound change in its composition. Flat fishes, herrings, gadoids, or cods and their relations, become the important elements, while there is a remarkable increase of members of such groups as the

liparids, blennies, cottoids, and agonids. At the same time we find the Pacific salmonoids appearing, and running up the rivers to spawn, in exactly the same way as they do on the coasts of Alaska, British Columbia, and the North Pacific coast states of America. In other words, the marine fishes of the Manchurian region show strong affinities with those of North America.

The fresh-water fishes of China are in many ways unique, or, perhaps it would be better to say, China possesses a somewhat unique fresh-water fish fauna. It is overwhelmingly cyprinid in its composition, the carp family having reached a high stage of development in these parts. It is impossible to give a list of the peculiar cyprinids that occur in Chinese waters, but a few forms may be mentioned. The gigantic *Elopichthys bambusa*, which resembles in its external characteristics a salmon, and reaches a length of four or five feet, and a weight of over a hundred catties, is one. The peculiar *Hypophthalmichthys molitrix*, whose generic name means the fish with the eyes on the under side, is another. This species also attains a great size. China also possesses some very remarkable gudgeons, one of which is very long and slender in the body, and has a long snout, which gives it the appearance of a sturgeon. Breams, chubs, carps, culters, bitterlings, minnows, and loaches are all represented, many of them by genera purely Chinese. It is maintained that China was one of the centres of development and dispersal of the ciprinids, or carp family, and from a survey of its fish one might well believe this to be true.

Next to the carps come the cat-fishes, or *Siluridae*. Here again China contains a great variety of species, though, taken as a whole, they have nothing like the economic value of the carps.

Other groups of importance are the so-called Chinese perches, which are in reality basses, certain cottoids, or bullheads, and the serpent-heads.

Of isolated species the little *Polyacanthus opercularis*, from which the Chinese have bred the paradise fish, and the peculiar ganiod *Psephurus gladius*, which inhabits the Yangtse and the Yellow River, and whose only other near relation is confined to the Mississippi, are worthy of mention. The distribution of the latter species and its near relation is interesting, as it is exactly that of the alligators, of which we noted that one form occurs in the Yangtse and the other in the Mississippi basin. It may further be noted that the ganoids, like the alligators, belong to a very ancient type.

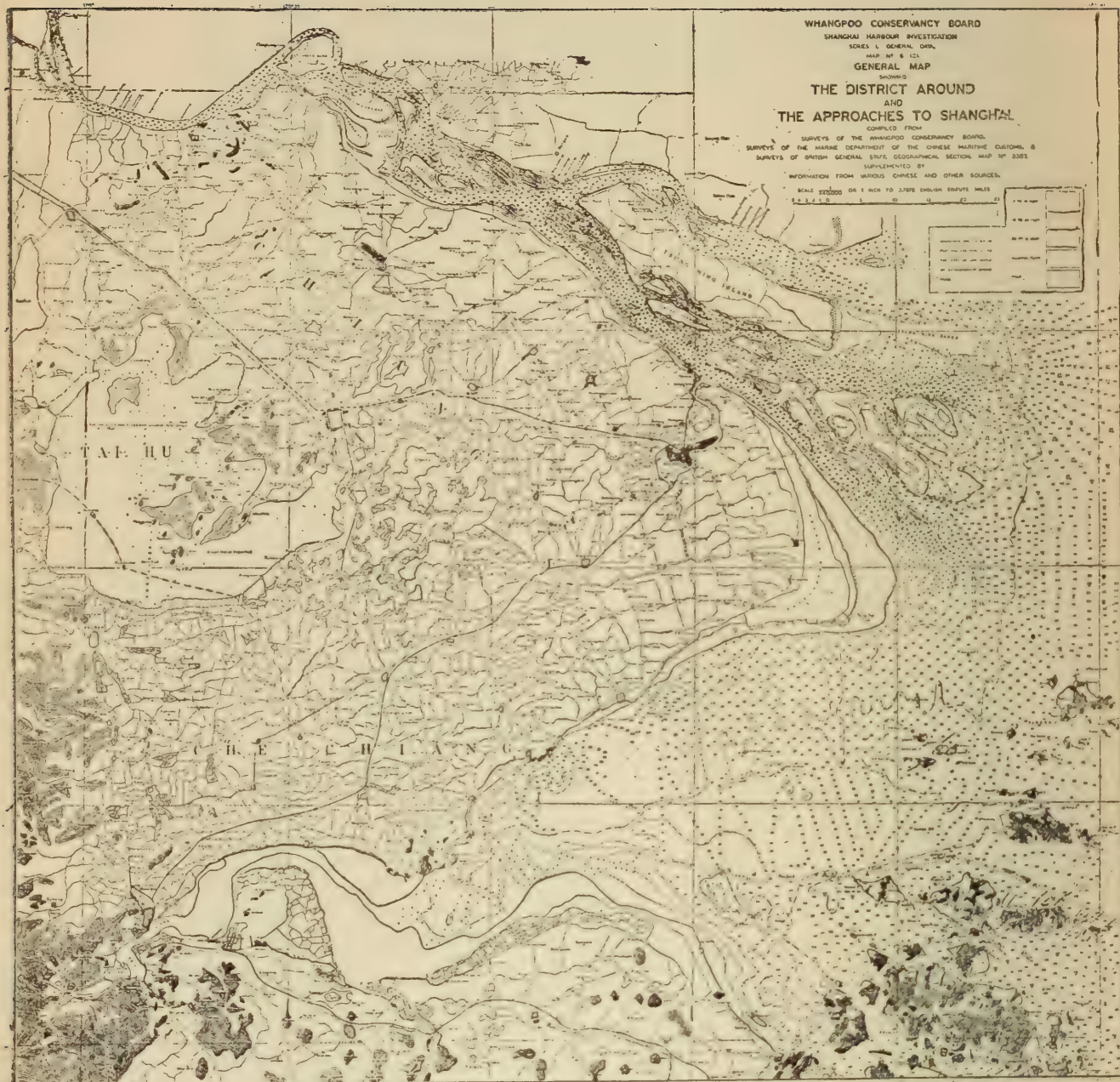
In connection with the fishes of China I should like to point out to the members of the Royal Asiatic Society that the museum contains practically no specimens of these forms of cold-blooded vertebrates, and though the present acting curator, Dr. Noel Davis, and I are trying to remedy this defect, it would be a splendid thing if someone would undertake to look after this branch, for of all things the Shanghai Museum ought to have, a good collection of fish, both marine and fresh-water, is one of the most important. In this branch, if in no other, lies a fine field of research, for it has an economic as well as a scientific importance that none can deny.

INVERTEBRATES.

We may now consider for a brief space the invertebrates of China. Had my line of research in China been more in the direction of the invertebrates, this lecture would have been devoted almost entirely to them, for, important as the vertebrates are, they pale into insignificance when compared with the lower forms of life. Yet, sad to relate, the latter have been very much neglected. Zoologists have almost invariably gone after the higher types of animal life, treating the lower forms more or less as unimportant side lines. This is a great pity, for the country is particularly rich in its invertebrate fauna, and would well repay work done in this direction. It is true that one or two branches of invertebrates have been well worked, notably in the case of the lepidopterous insects, and sea shells. Other branches of insect life, however, have been badly neglected, while almost nothing, or, at least, very little, is known about the terrestrial mollusks. What little is known shows that the land snails of China are of vital importance in the matter of determining how the fauna of these parts acquired its present distribution. Here, then, is another field of research open to some enthusiast.

One other very interesting branch of zoological study that the country offers is that of the marine and littoral invertebrate fauna. This is a branch that many of the members of this society, and of the whole Shanghai community, for that matter, might take up without undue expense or exertion, for most people spend some of their holidays at the seaside, where marine forms of life are thrust upon one's notice. The museum has some good material in this line, but what is wanted is someone to take up this branch and go into it thoroughly, and I can promise that

person that he or she will be amply rewarded. Museums at home are crying for such material, and it would be a very easy matter to work in cooperation with experts in America and Europe, and so hasten the day when we can say that the Natural History of China is an open book for all who will to study and enjoy. May that day soon come, and may the North China branch of the Royal Asiatic Society, as practically the only scientific society in the country, do its part.



To face page 21

THE GROWTH OF THE YANGTZE DELTA.

H. VON HEIDENSTAM, C.E.

- (1) INTRODUCTION.
- (2) GENERAL FEATURES OF THE YANGTZE.
- (3) TIDES.
- (4) GENERAL FEATURES OF THE DELTA :—
 - (a) PHYSIOGRAPHY
 - (b) HILLS IN THE DELTA
 - (c) DEPRESSIONS
 - (d) TAI HU
- (5) THE GROWTH OF THE DELTA.
- (6) GENERAL GEOLOGICAL FACTS.
- (7) SUBMARINE BANKS ON THE CHINA COAST OUTSIDE THE DELTA.
- (8) HISTORICAL RECORDS OF THE ANCIENT MOUTHS OF THE YANGTZE.
- (9) HISTORY AND DATES OF ESTABLISHMENT OF CITIES.
- (10) SEA DYKES AND SEA WALL.
- (11) THE CANAL SYSTEM.
- (12) HISTORY OF TSUNGMING ISLAND.
- (13) HISTORY OF THE NORTHERN OR HAIMEI PROMONTORY.
- (14) THE FEATURES OF HANGCHOW BAY, AND THE CHIEN TANG ESTUARY.
- (15) RESUMÉ.

INTRODUCTION.

The very ground on which this building of the Royal Asiatic Society stands, down to a depth of probably over 250 feet, consists of fine particles of alluvium, sand and clay, chiefly eroded from the Upper Yangtse—perhaps from Szechuen, perhaps from still further up the Chin Sha Kiang—the river of Golden Sand, as the head stream of the great “Kiang” is called—and transported here by that mighty stream.

At the depth of about 250 feet below ground surface the deposits found are pebbles and boulders, which would show that layer to have once been near the surface of vast

rivers and then submerged: in other places, the layer at about this depth is of marine character indicating an old sea bed.

Egypt has been called the gift of the Nile, and in the same sense, the great plain of Kiangsu is the gift of the Yangtsekiang.

The Delta is *still* in a state of flux and growth, as intense as ever, and the processes at work form a most interesting study. On the plain, Nature's great forces are at work in the same manner as has prevailed for thousands of years, and are enough to create or obliterate vast stretches of land in a comparatively short period, and open new river outlets and close old ones within a couple of decades.

As a landscape, this rich and fertile plain makes little or no appeal to the æsthetic sense nor does it offer much scope for the exercise of the talent of the painter, but it has charms for the student of Nature's forces.

The history and the romance of the fights of the mud dragons of the Yangtse with the dragons of the China Sea, and the triumph of human endeavour over the floods and tides which again and again broke the ever-advancing dykes of the earlier inhabitants, who bravely pushed their puny works of sea defence outwards on the rising sands, is surely full of human interest.

The viewpoint from which I have studied the "Romance of the Yangtse Delta" has been that of the river engineer—probably the least romantic side of all. Nevertheless, this study has given me much pleasure and has compelled me to consider the historical and geological viewpoint—both distinctly more romantic, particularly if you leave your imagination a free rein.

Perhaps I had better explain the reasons why it has been and is necessary for me, as the engineer to the Whangpoo Conservancy Board, to study the Yangtze Estuary.

The Huangpu, to which Shanghai owes its greatness as a port, is largely dependent on the Yangtze. Not only is it a tributary, but being practically without slope, it depends for its ebb and flow on the changing level of the larger river; in other words, the Huangpu fills and empties as the Yangtze rises or falls, and as nine-tenths of the Huangpu water is tidal, one-tenth only being drainage from its own basin, its dependence upon and relation to the Yangtze are obvious. The Yangtze is largely responsible for the silt in the Huangpu.

The Yangtze is the approach to the port of Shanghai and the Fairy Flats, 25 miles outside Woosung in the

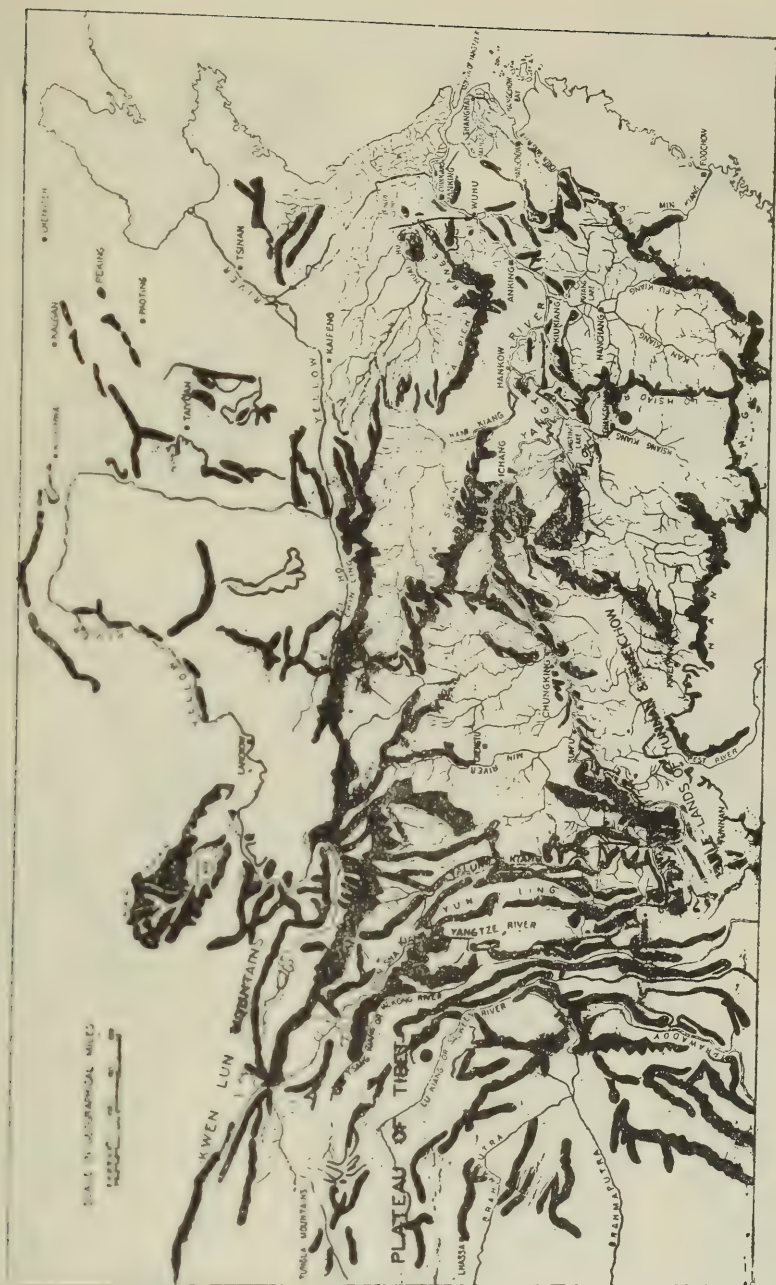


PLATE 1

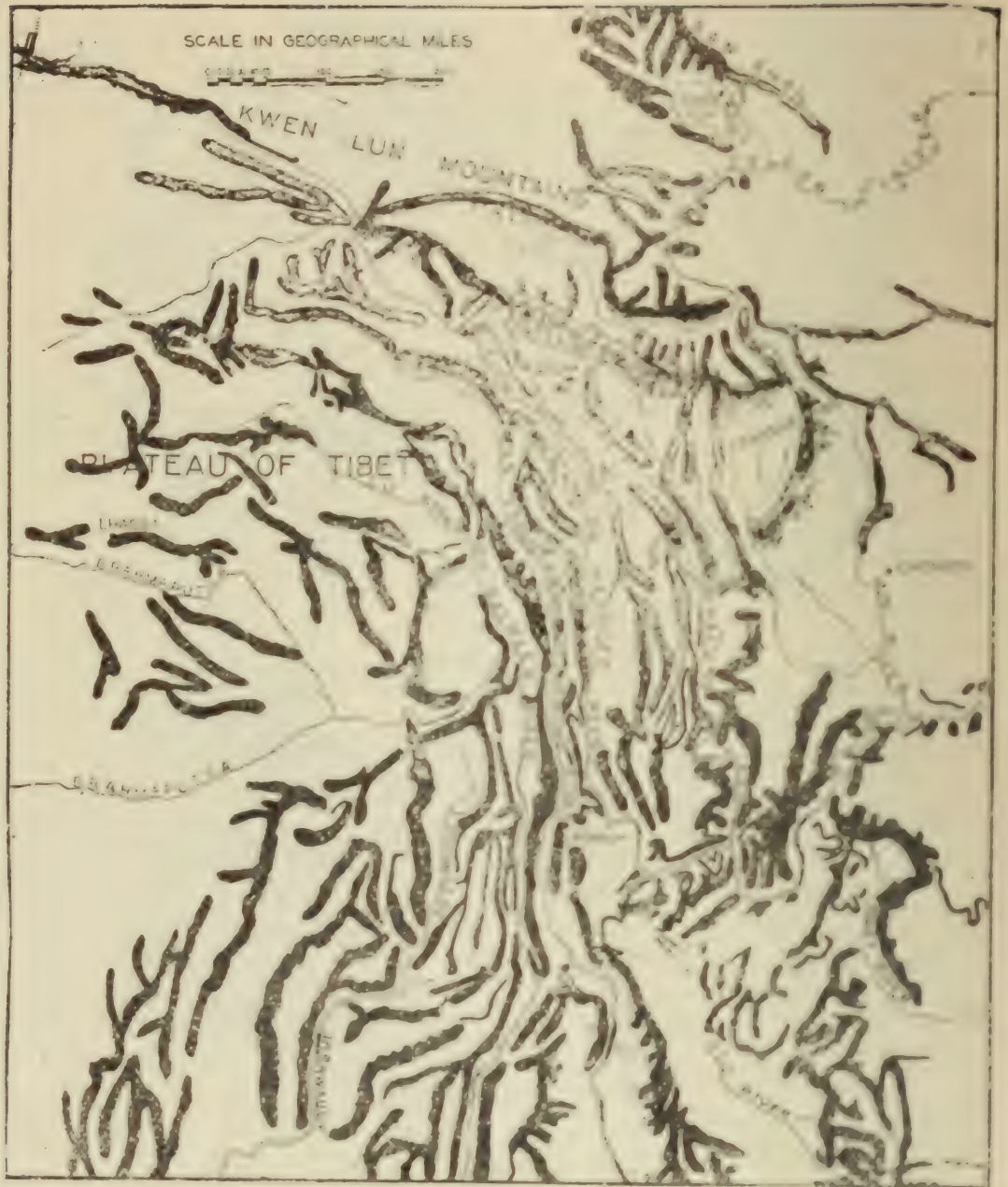


PLATE 2

Estuary, is the main hinderance to the ocean ships entering this port. The bar is 17-18 feet at lowest low water and 28-30 feet at neap high water.

My study of the Yangtze Estuary especially with reference to Shanghai as a port has been published in several reports—which may be found in the library of this Society.

One, the "Report on the Yangtze Estuary, 1917," one on the "Hydrology of the Yangtze Estuary of 1919," and one on the "Hangchow Bay, 1921." In order to get an authoritative opinion on the geological side, Mr. V. K. Ting, B.Sc., Glasgow University, Director of the Chinese Geological Survey was asked to report and did so in a report on the Geology of the Yangtze Valley below Wuhu, dated 1919.

Before returning to the immediate subject which concerns the *Growth of the Delta*, let me recapitulate some of the main features of the two natural factors which are at work in the delta—the transporting agent, the Yangtzekiang, and the receiving medium, the sea with its tides.

GENERAL FEATURES OF THE YANGTZE.

The river rises in Thibet at approximately 34° Latitude and 91° Longitude, flows south and east for about 800 miles to about Latitude 22° North, when it trends to the northeast and finally empties into the Yellow Sea at 32° North Latitude and 122° East Longitude. It has a total length of approximately 3,200 miles, and with its tributaries, drains an area of approximately 756,500 square miles, which is four times the size of France. It is the sixth in length of all the rivers of the world. It is navigable from the sea a distance of 1,630 miles to a point just above Suifu, in Szechuen Province. Above this point, owing to the narrowness of the channel and high velocity of the current in the gorges, steamer navigation is impossible except for short stretches. In this section the elevation of the river drops from approximately 17,000 to 800 feet above sea level. See Plates 1 and 2.

In the unnavigable and unexplored torrent of the "Golden Sand" (Chin Sha) from the Thibetan frontier to Ping Shan Hsien near Suifu in Szechuen, there is a fall of about 8 feet per mile or 1 in 750. This is, of course, not uniform. From Ping Shan to Ichang, the fall is about 1 foot per mile, or say, 1 in 5,000. From Ichang to the sea the fall is very small, about 3 inches per mile, or 1 in 20,000. From Wuhu to Woosung at time of low river the

fall is less than an inch per mile which is flatter than one in a hundred thousand. See Plate 3.

The average discharge during the year is 1,050,000 cubic feet per second.

TIDES.

The powerful semi-daily tides of the Pacific Ocean traverse the China Sea, advance up the Yangtze a distance of 450 miles, diminishing gradually from a range of 15 feet at Spring Tide at Side Saddles until its daily effect is no more apparent at Kiukiang, and this agent complicates the formation of this delta. It is quite different from the Nile or the Mississippi.

(a) *Physiography*.—The Yangtze emerges from the hills which practically define its course at Chinkiang. The hills on the right bank are the eastern extremity of the Nanking System, and the hills on the left bank 10 miles inland at Yangchow are the eastern extremity of the mountains forming the northern divide. See Plate 4.

The Yangtze Delta is roughly east to a line from Yangchow southwestward through Chinkiang thence southeastward to Hangchow. The western border is defined by the Langshans or mountains of South Anhwei terminating in the Tung Kwan Shan, west of the Tai Hu and the Nanking System.

The general level of the plain is about the level of ordinary high water, 12 to 15 feet above lowest low water at Woosung Forts. The immediate shore is dyked considerably higher than ordinary high water, but with an exceptionally high river as in 1921, great areas of the plain are flooded.

No accurate maps in the modern sense exist earlier than 1842—the British Admiralty Survey.

(b) *Hills in the Delta*.—Besides the range of hills at Kiangyin and around the Tai Hu Lake, there are several other groups, at Kanpu and Chapu on the Hangchow Bay, at Sungkiang in the center of the drainage basin, at Langshan on the left bank of the Yangtze, and many island-like hills Chinwangshan and Choshan near Chinshan, Quinsan near the city that bears that name and Yahzashan near Changan. See General Map.

The group near Kiangyin are probably a prolongation of the Nanking System, while the group along the shore of the Hangchow Bay are the extensions of the coastal hills at Hangchow.

The isolated hills are mostly volcanic and partially buried in the delta plain.

LONGITUDINAL SECTION OF THE YANG TZE KIANG

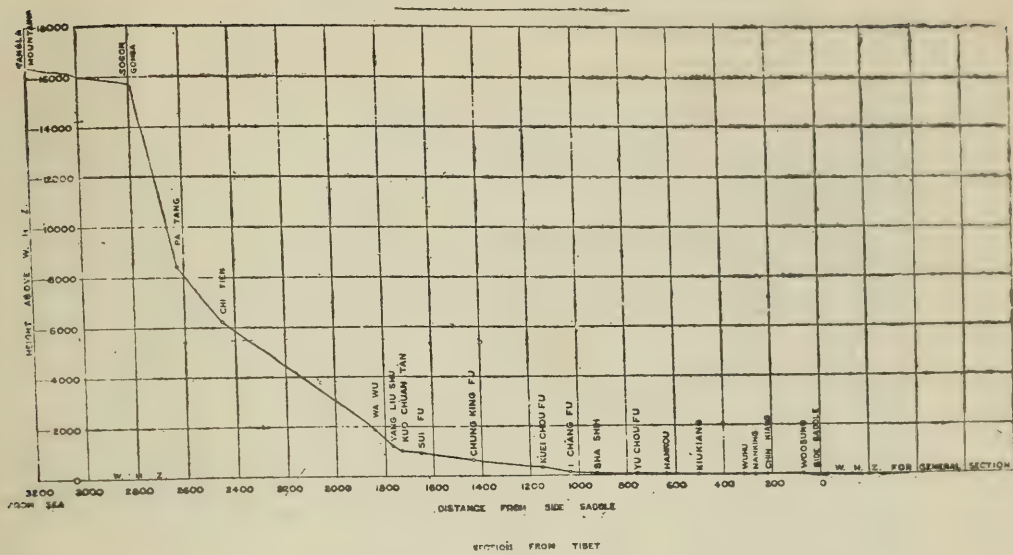


PLATE 3



PLATE 4

(c) *Depressions*.—Between the two mountain masses that form the western border, there is a very low depression extending westward from the western shore of the Tai Hu to the Yangtze at Wuhu. This depression is divided about midway by a ridge of loess forming a watershed, a series of lakes to the west drain into the Yangtze, while those to the east have either formerly been a part of the Tai Hu or drain into that lake.

On the northern side of the Yangtze River a belt of swampy land forms almost a continuous sheet of water. On the southern side, there is also a continuous lake area. The drainage system of these lakes is also complicated, for every lake has more than one outlet.

(d) *The Tai Hu*.—The Tai Hu lies at the foot of the great mountain system which forms the western border of this great plain. Within the perimeter of the lake there are some ninety hills rising to heights of 1,500 feet. Its surface is 4 feet above the mean sea level and about one to two feet above the mean water level at Woosung in the winter and the lake is in free communication with the sea *via* the Tien Shan Hu and the Huangpu. Its depth is up to some 8-10 feet.

These facts tend to confirm the supposition that the mountain range along the western Tai Hu is the western extremity of the Delta, and that the Tai Hu was at one time a part of the sea.

The outlets from the Tai Hu are on the east side. They may be divided into three groups. The first group consists of the channels into the Grand Canal to Soochow. These empty into the Yangtze at Liuchiaho.

The second group consists of two channels, one to the north of, the other to the south of, Wukiang. These ultimately empty into the Soochow Creek.

The third group consists of two principal channels which eventually find their way into the Tien Shan Hu and the Huangpu. These channels are all in communication with each other and they all reach the Yangtze.

The discharge of the lake is principally through the Tien Shan Hu and thence through the Huangpu.

THE GROWTH OF THE DELTA.

In order to explain how this delta came into being, let us consider the agent that is known to be active to-day in extending the delta, *i.e.*, the silt of the Yangtze. This is the agent that is building banks, bars and shoals in the

Estuary of the Yangtze and accordingly attracted my attention.

Several years observations at Wuhu and Kiukiang, (where the influence of tide is not felt and where there is a steady downward flow all the year round) have resulted in our being able to state fairly well the amount of silt brought down in suspension by the Yangtze each year, apart from the quantities rolling down along the bottom.

By gauging the river at different stages, we have been enabled to determine the amount of water discharged daily, averages for the year, etc., and by a daily analysis of a sample of the water, we are able to state the quantity of silt carried in suspension. The quantity of silt rolled along on the bottom has not been herein considered.

The average amount of water per year is 1,050,000 cubic feet per second. The average amount of silt is 500 parts per million by weight or 350 parts per million per volume. That means 11,000,000,000 cubic feet or 400 million tons per year, or enough to cover 400 square miles 1 foot deep or 40 square miles 10 feet deep.

The silt deposits on a front of over 100 miles on a slope of 3 feet per mile down to a depth of 250 feet and thus over an average breadth of 83 miles: making the area 8,300 square miles. Hence this area should rise 1 foot in 20 years. As the average slope is 1 in 2000, the coast advances 2,000 feet in 20 years, or *1 mile in 60 years*.

This gives a period of growth since the coast was at Kiangyin (a distance of say 80 miles perpendicular to the coast) of 5,000 years. The whole area below the Chinkiang-Hangchow line of hills (120° longitude) is 15,000 square miles. Borings at Shanghai show pebbles and marine deposits at 250 feet, so that if this is the depth of the old sea bottom and the present silt rate is applied it would take 10,000 years from Chinkiang to the present coastline. (Before, of course, most silt stopped above Chinkiang).

These figures are of course only indicative as the area, depth, slope, over which the deposits occurs, and the discharge of the river vary through the centuries.

The manner in which the Yangtze Delta is built up is of course not like that in which a mud-laden stream emptying into a quiet lake would cause a growth of its shoreline—a fanwise extension of the coast into the lake.

Due to the tides—there is an ever changing number of outlets, islands, tidal swashways—old areas, new areas, openings and reopenings—backwards and forwards all over

BORINGS AT CHOSAN,
NEAR
CHINSHAN ON THE HANGCHOW BAY.

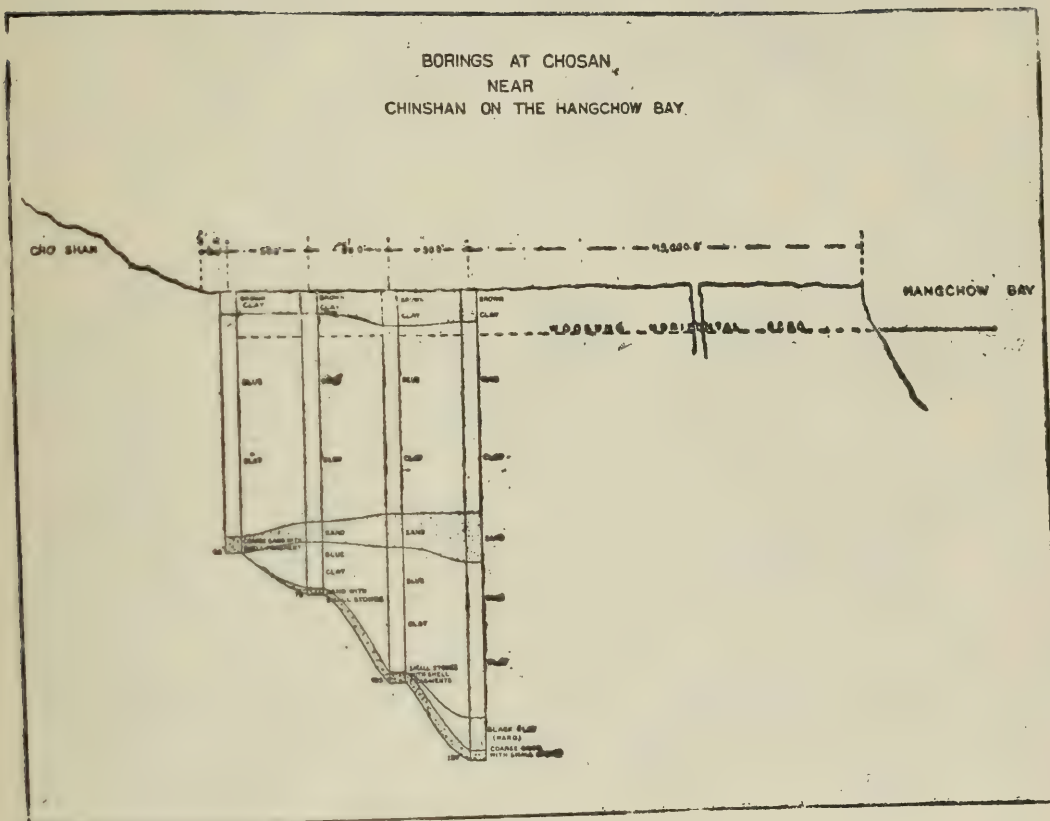


PLATE 5

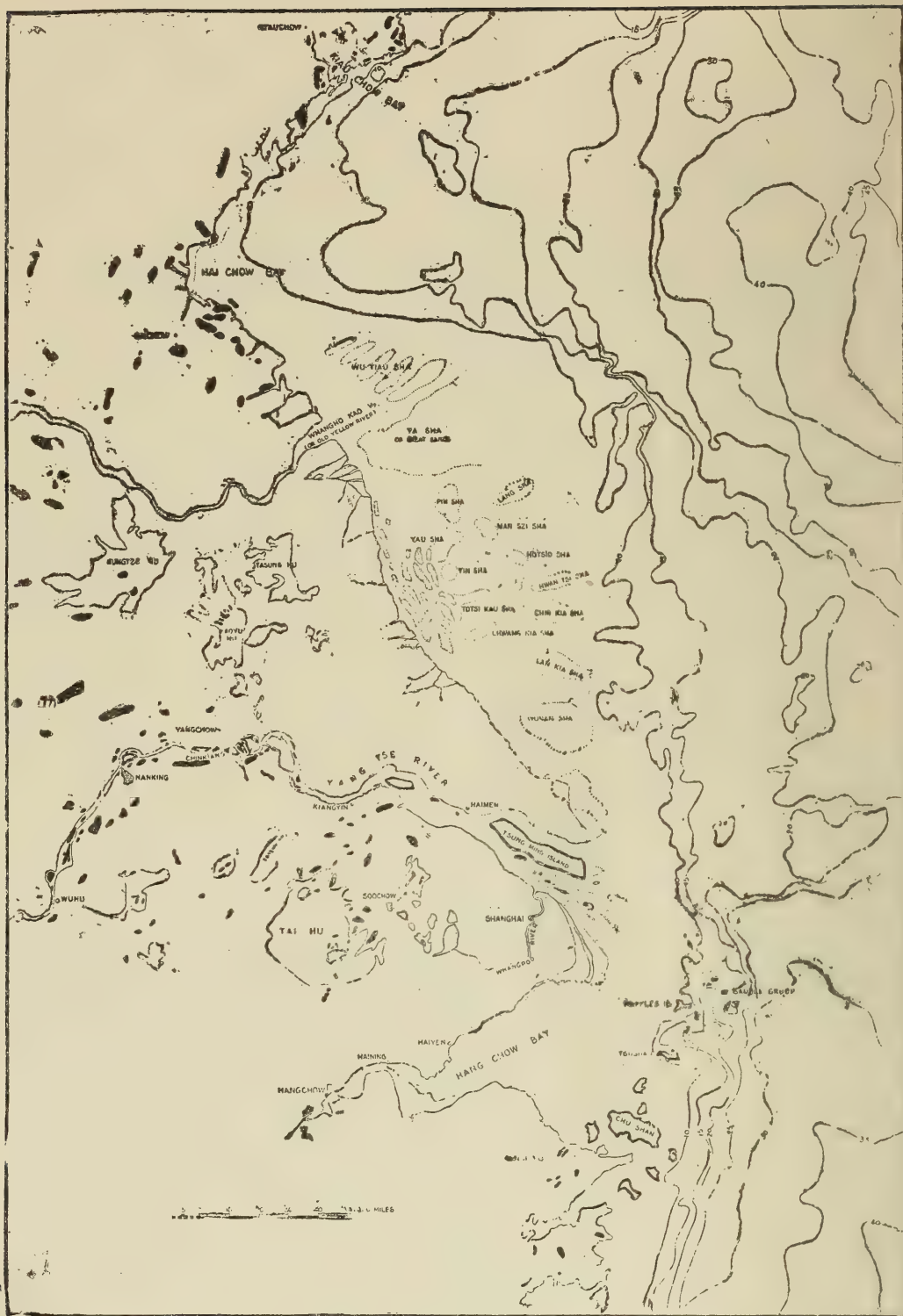


PLATE 6

the estuarial area, but the resultant motion is distinctly forward and on an average at the rate mentioned.

In order now to corroborate or disapprove these calculations as to the delta-growth which are based on most exact silt data for some years, but of course the assumption as to width and area of deposit are very conjectural and contestable, I arranged for a number of facts and data to be investigated from the point of view of the geology, general history, topography and hydrography of the district which seem in more or less degree to bear out the river-engineering conclusions arrived at.

GENERAL GEOLOGICAL FACTS.

Mr. V. K. Ting, the Geologist, in his 1919 report, states that the whole eastern coast has been sinking, the fiord-like arms of the sea from southern Chekiang to Kwangtung being drowned valley, and the isolated hills in the delta of alluvium are nothing but buried mountains.

Though it is uncertain whether this subsidence is still going on, there can be very little doubt that, geologically speaking, it has been subsiding until quite recently, as many physiographical features which can only be directly due to this movement have not sensibly modified by subsequent erosion.

This sinking process in recent years, if existing, must have been extremely slow as the rate of deposition of the Yangtze silt was more than enough to counter-balance the effect of sinking.

I have also arranged for borings at various places in the Yangtze Delta.

The borings at Chosan, a hill about 150 feet high, a mile north of Chinshan were made from the base of the hill, southward, at 500 feet intervals. At the base of the hill borings became very difficult at -65 feet W.H.Z. when shale stones and fragments of shells were taken out. The second boring was practically the same. At the third and fourth boring these difficulties were not encountered until depths of -78 feet -127 feet respectively were reached. See Plate 5.

At House Island a depth of -148 feet was reached; at Woosung Forts -135 feet; at Pootung Point -184 feet; at Tien Shan -138 feet; at Soochow -267 feet and Quinsan -237 feet W.H.Z.

A boring on the Bubbling Well Road, Shanghai, carried out by various interested persons and already described in the "Transactions of the Engineering Society" reached a depth of 420 feet, approximately 406 feet W.H.Z. Pebbles were encountered at a depth of 228.

These facts bear out Mr. Ting's assumption that this region has undergone subsidence but that the deposits by the Yangtze have been more than enough to counterbalance the ultimate sinking.

SUBMARINE BANKS ON THE CHINA COAST OUTSIDE THE DELTA.

The growth of the great central Plain of China is of course, the combined work of the two rivers, the Yangtze and the Huangho (Yellow River).

The configuration of the bottom of the sea and coast outside the actual coastline is telling a very plain tale. What actual principles can be laid down for the delta building is doubtful. See Plate 6.

HISTORICAL RECORDS OF THE ANCIENT MOUTHS OF THE YANGTZE.

There were various statements as to the ancient mouths of the Yangtze, mentioned in the old "Yukung" written 4,000 years ago, but there are no records clearly defining what was meant by these mouths and the present topography of the delta does not warrant a definite theory corroborating any of the old statements which were delightfully vague as to the details of the situation. See Plate 4. Later, Chinese writers have explained this in several ways:—

1.—Those who believed that the Yangtze divided somewhere near Wuhu or Taipingfu, one branch coming down the present channel of the Yangtze and the other two through the depressions between the Nanking hills and the hills to the west of Tai Hu.

A continuous water communication from Wuhu to the Tai Hu *via* Tungpa in Kaochun does exist through an artificial channel from Kaochun to Liyang. The passage is cut through a loess barrier, and Mr. Ting after an examination of this region states that no arm of the Kiang however small could possibly have gone through here without leaving recognisable signs of its presence.

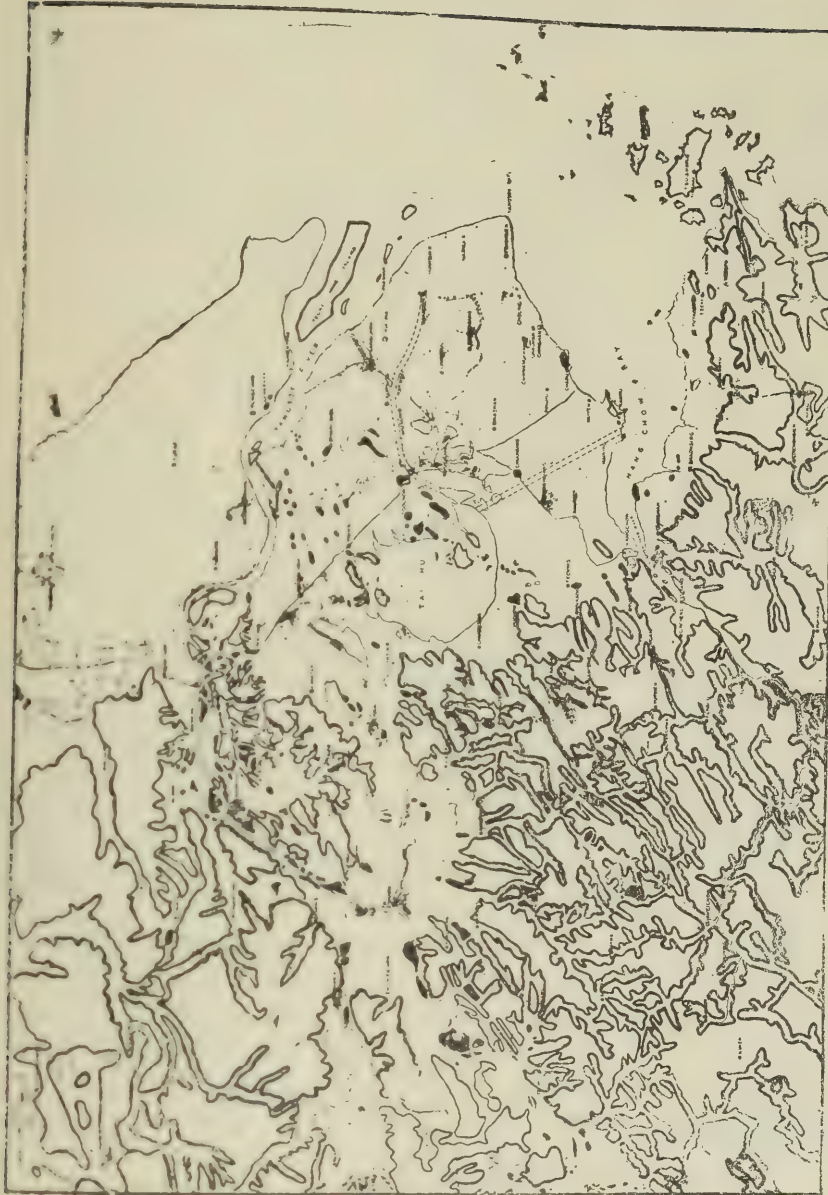


PLATE 7

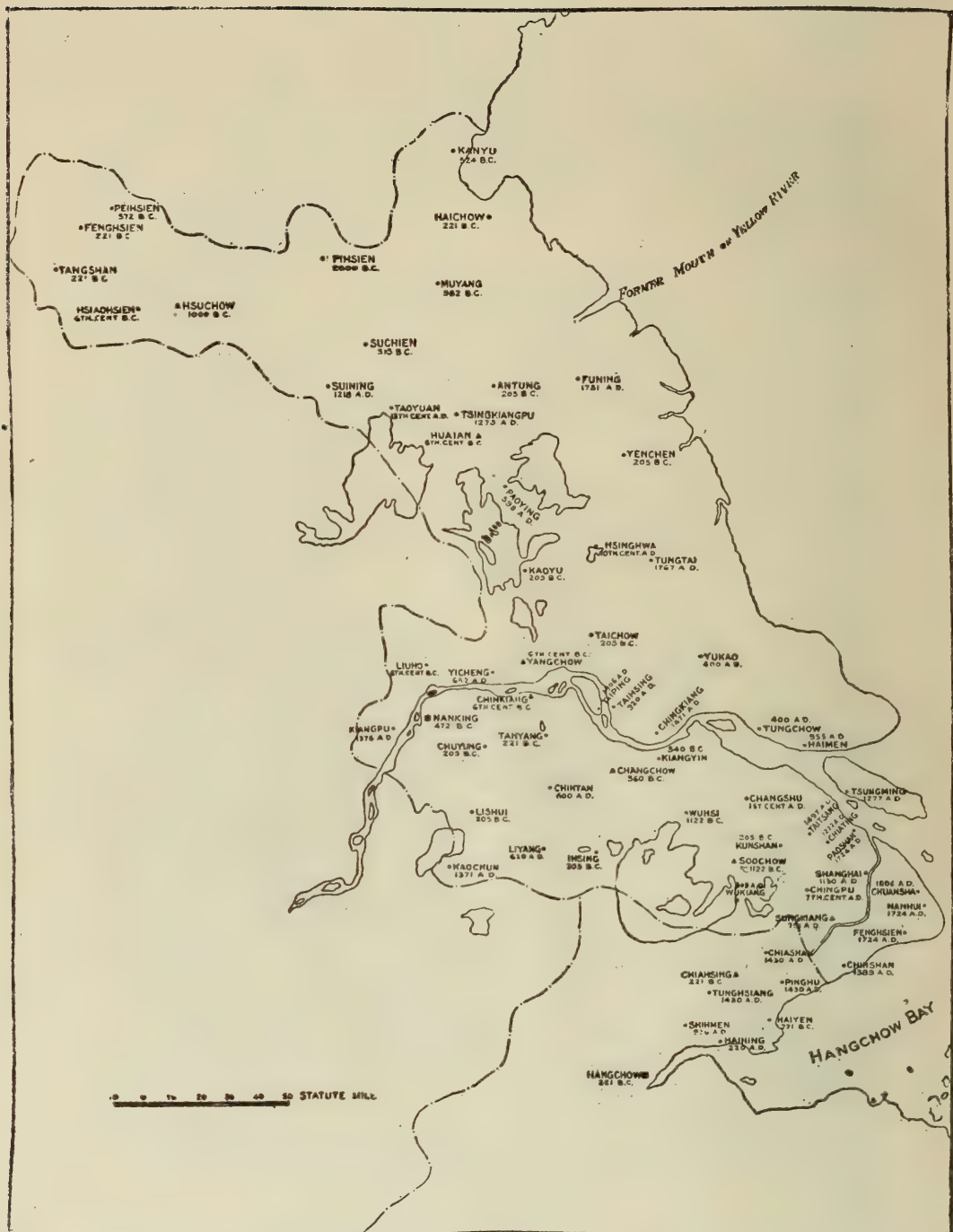


PLATE 8

2.—Those that believed that the three mouths were in the ancient province of Yangchow (Kiangsi, Anhwei, Kiangsu and Northern Chekiang). See Plate 7.

- a. The Sunking—the Soochow Creek of to-day.
- b. The Sankiang, a river north of the Soochow Creek.
- c. The Tungkiang, sometimes identified with the Whangpoo.

These are practically only outlets of the Tai Hu. The word "Kiang" was formerly applicable only to the Yangtze, the widening of the term, which means now a large river, came about very much later. It is improbable that the outlets of the Tai Hu should receive such a name. The Sankiang is merely a branch of the river Sunkiang, and the Tungkiang could only very doubtfully be identified with the Whangpoo.

3.—Those who accept the Chien Tang Kiang as one of the outlets.

- a. North Kiang is the Yangtze.
- b. Middle Kiang is Sunkiang (the Soochow Creek).
- c. South Kiang is the Chien Tang Kiang.

There is considerable evidence that the Sunkiang or Wusungkiang was at one time much more important: the silting up of its channel, largely due to tidal action, occurred in comparatively recent time. On the other hand, there is no reason to doubt that the Yangtze River and the Tai Hu have always been in free communication as it is to-day.

The third or South Kiang is identified with the Chien Tang because it is the only river that has sufficient water to deserve such a name. It has been more or less in free communication with the Yangtze, either *via* Tai Hu or to the east of it. So it would not be unnatural to apply the name "Kiang" in this case, but there is no passage now from the Yangtze west of the Tai Hu to the Chien Tang.

4.—Those who consider that the three main tributaries at the source of the Yangtze were referred to as the outlets.

The three Kiangs are the three upper principal tributaries of the Yangtze: the Han is the north outlets: the Min the middle: and the Kankiang of Kiangsi, the south outlets.

The interpretation that the three tributaries at the source are the three Kiangs, the outlets, is difficult to reconcile with the general meaning of the text which constantly refers to the ancient province of Yangchow, and the Han and the Min are both outside of that ancient province.

I think it quite safe and correct to say that the hazy references in the early book "Yukung," the oldest book on geography presumably written by the Emperor Yu 4,000 years ago, part of the book of History, the "Shu King," to the three "Kiangs," can at most signify that there did exist

a *Delta to the Yangtze*, i.e., that the Yangtze had several, at least three, probably more, mouths.

To put more value on it than this seems to me to be very unsafe.

The paper on the Ancient Mouth of the Yangtze Kiang by Rev. J. Edkins, 1860, is very interesting in calling attention to the many explanations in Chinese literature of the subject, but as it does not apply the test of the exact sciences—neither geology nor hydrology, it gives no opinion on the value of those statements, and Richthofen's acceptance of the statements must have depended on their not having been able actually to verify existing conditions.

HISTORY AND DATES OF ESTABLISHMENT OF CITIES.

In Mr. Ting's report the following interesting analysis is made:—

If we draw a N.S. line from the north of Kiangsu through the district of Tungt'ai, and then prolong it to the S.E. through T'ai'sang Chiashan, and south to the sea, we see that all the cities to the east of this line were established after the 5th century A.D. See Plate 8. Of the 34 cities established in the Christian era, 18 are to the east of that line. On the other hand, of the 49 cities west of the line only 17 are dated after the 3rd century A.D.; all the other cities go back to 200 years B.C.

East of the line no city goes back further than the fifth century A.D.

Moreover the dates of establishment of cities vary as the distance from the sea.

In this connection some wrong information as to Shanghai is current. As late as 1916, before this Society, Shanghai was said to exist in the year B.C. 221 as a distinct city. This must be an error, as it cannot be identified with any actual records.

Shanghai became a district city (Hsien) 1290 or 1264, but has probably existed since A.D. 1075 or 1130.

Sea Dykes and Sea Wall.—The building of a complete and continuous system of earthen embankments known as "tang" or dykes, is one of the factors of the Delta's growth. Along the south shore of the Yangtze practically a continuous dyke runs from Kiangyin, round the Yangtze Cape, past Chapu and Haining almost to Hangchow. See Plate 9.

The sea dyke built along the coast of Southern Kiangsu and Northern Chekiang extends from Hangchow to the Southern part of Ch'angshu opposite the Ch'ungming island.

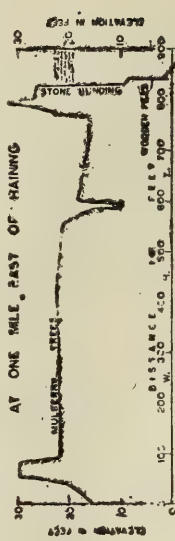
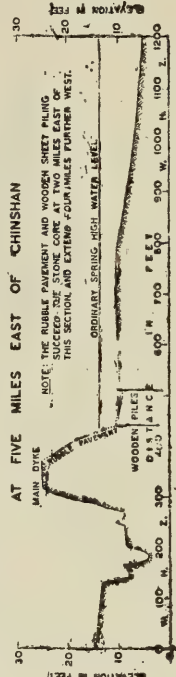
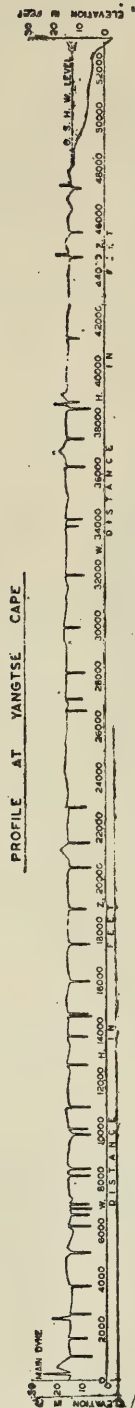


PLATE 10

It is commonly supposed to have been built first in the T'ang dynasty, but according to the Records of Sungkiang in which the question was fully discussed, the age of the dykes is different in the different parts. Those in Chekiang are the oldest, as some of them certainly date back to the T'ang dynasty. The dykes in Kiangsu, on the other hand, are much more modern.

In fact, even in Chekiang, the dykes are not of the same age. The oldest part is that of Haining which was built before A.D. 713 when it was repaired. Next come the Hangchow dykes which were built with difficulty by the famous Prince Ch'ienliu (錢鏐) in A.D. 910.

The present dykes at Haiyen and part of P'inghu are comparatively modern, but other and more ancient dykes existed there. It is known that before the 11th century the sea was 95 *li* from the city of Haiyen, and there were eighteen parallel dykes to protect it. In spite of them the sea advanced steadily so that by the end of 13th century, the coast was only two *li* from the city. The distance was decreased to half a *li* in 1370. This rapid advance was only partially stopped by the repeated building of more massive stone dykes, the site of which probably coincides with that of 1381.

Although the sea dykes in Kiangsu are supposed by some writers to be originated from the T'ang dynasty, the existing dykes date only from A.D. 1472, the site of the old dyke being lost. These in Ch'angshu form an exception, for they were first built in 1754. There has been far less trouble and repair than in Chekiang.

The dykes at the Yangtze Cape in the district of Nanhui deserve special mention. See Plates 9 and 10. The innermost dyke known as Laot'ang was probably built in 1472. Constant addition of sand banks so increased the area under cultivation, that about A.D. 1590 the second dyke was erected to protect the newly established district city, which is situated on the very edge of the first dyke. The distance between the two dykes is about a mile which roughly represents the net gain from 1472 to 1590. The area outside the second dyke has increased very rapidly since, and in 1884 a third dyke was built to enclose 300,000 *mou* of reclaimed land. Another dyke was built soon afterwards to strengthen the protection. The average distance between the second and the third dyke is about 5 miles, an enormous increase in 300 years! If we divide the distance between the first and the third dyke (*i.e.* 6 miles) by the number of years from 1472 to 1884, it would give a rate of a mile in 69 years,

which figure is in wonderful agreement with 1 mile in 60 years.

The Canal System.—One of the most conclusive evidences of the Yangtze having built up the delta on which we live is the intricate canal system of the delta. See Plate 10a, 10b and 10c.

The canals are either tidal or their waters are held back by the great tidal influence at the mouth of their principal outlets, the Whangpoo, the Liu Creek, etc.

History of Tsungming Island.—The following dates are based on statements made in the Chih or Prefectural Records of Tsungminghsien, of which there have been nine editions since the end of the thirteenth century. See Plates 11, 12 and 13.

“In the first ‘Wu Te’ year of Kao Tsu, Emperor of the T’ang dynasty (A.D. 618) to the south of the subprefecture of Haimen, there suddenly rose from the waters two islands which were named ‘Tung Sha’ (East Sands) and ‘Hsi Sha’ (West Sands). In A.D. 696 some fishermen occupied them, and nine years later a town, ‘Tsungming’ was established.

“Some three centuries after their birth, these islands commenced to disappear, but at the same time there was formed a little way to the northwest a new one called Yao-liu-sha. In A.D. 1102, the two banks Tung-sha and Hsi-sha had completely disappeared and while that of Yao-liu-sha was itself also being demolished piecemeal, a further island rose in the N.E. and received the name Tung-san-sha (East Three Bank) from three families which established themselves there. In 1222 Yao-liu-sha which still resisted the destroying current had its name of Tsungmingchen changed to that of Tienszuchang (Salterns given by Heaven) and in 1293 it was made a district (Chou) with the earlier name of Tsungming. A walled town was erected in that year.”

A chart of these changes is published in the 1760 edition.

The Records proceed to describe how the island of Yao-liu-sha was steadily cut away on the south and built up on the north, compelling removals of the city in 1352 and 1420 (five miles in the first case and three in the second). The waters continued to encroach on the city and a third migration took place in 1529, the inhabitants going to the island Tung-san-sha which had remained firm. Here again, however, the river eventually began to destroy the city walls and the site was moved to a new island (Ping-yang-sha), somewhat to the south of Yao-liu-sha. Finally the same fate overtook this position and the fifty and last migration took place in 1583 to another new island S.E. of the

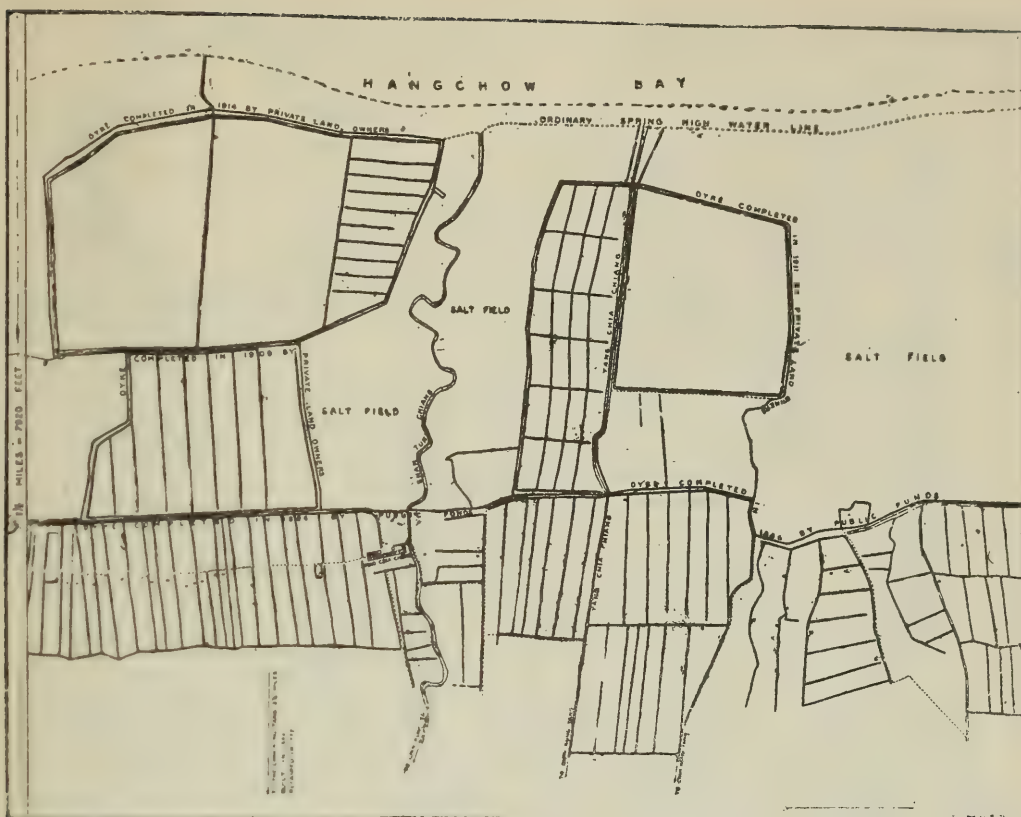
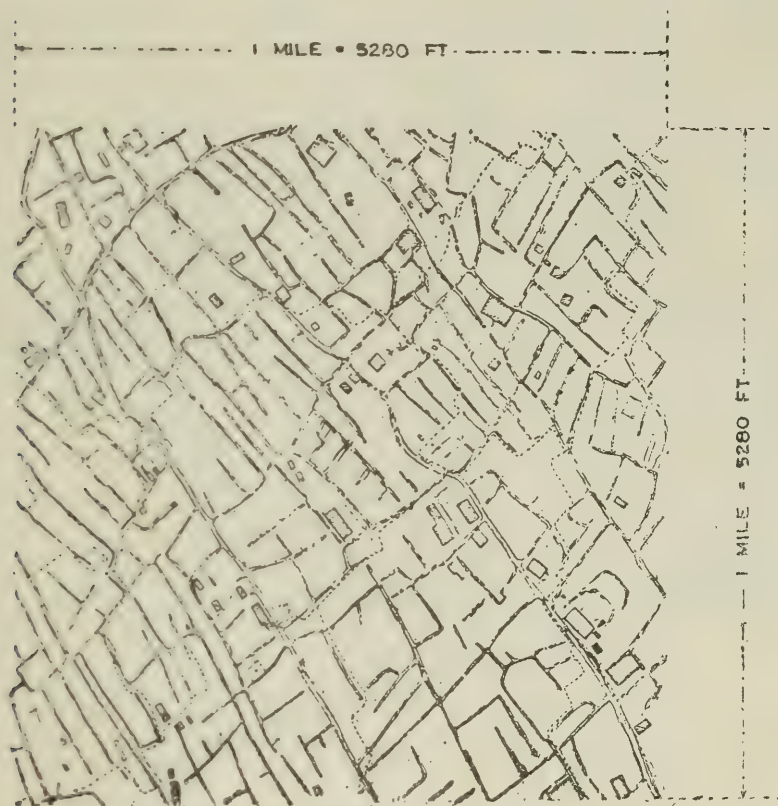


PLATE 10A



ONE SQUARE MILE NEAR THE VILLAGE OF
CHING TSUN CHIANG. NO OF WATERWAYS
CROSSED PER MILE 15 AVERAGE DISTANCE
BETWEEN WATERWAYS 380 FT

PLATE 10B

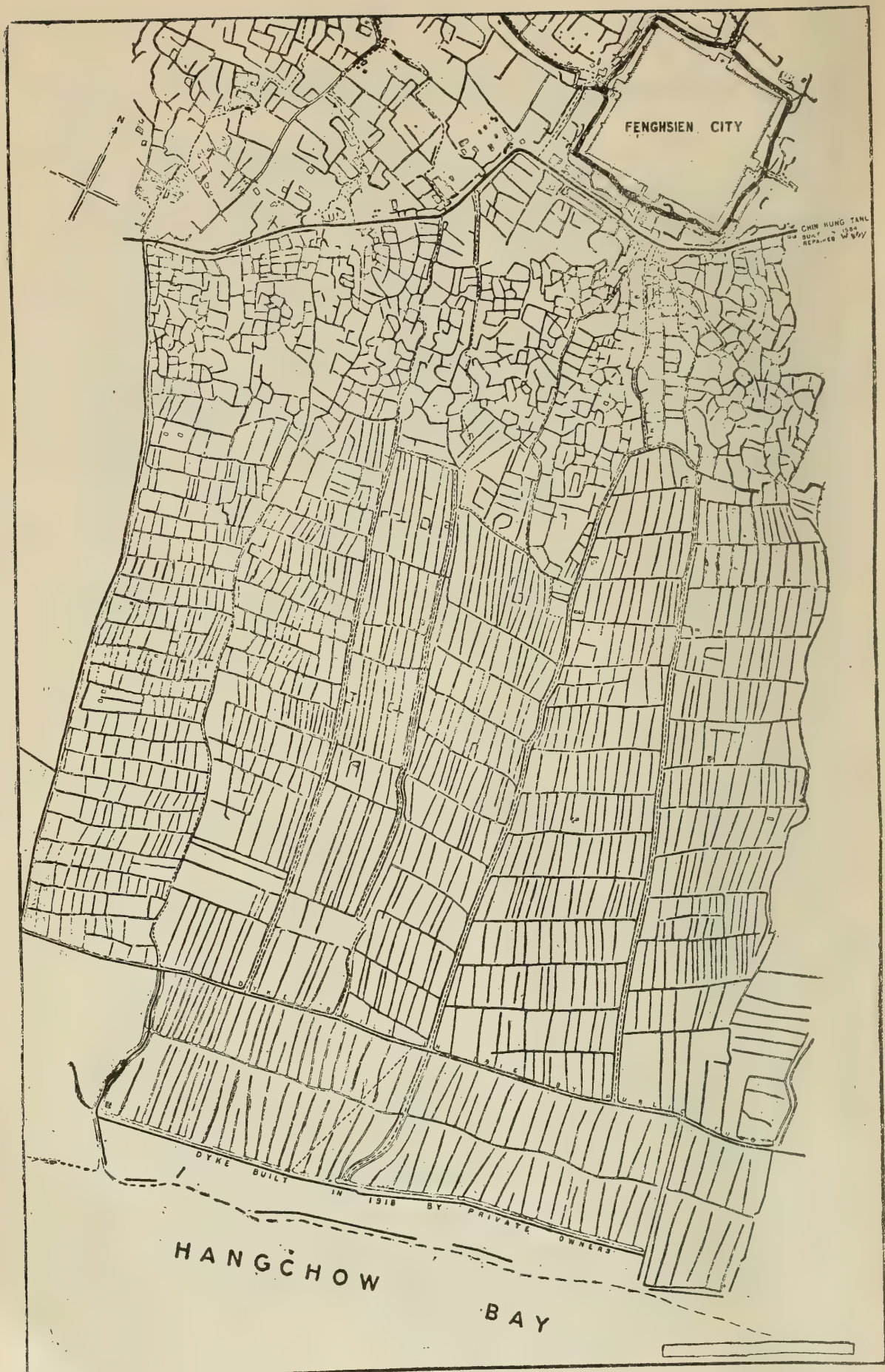
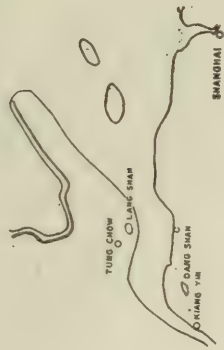
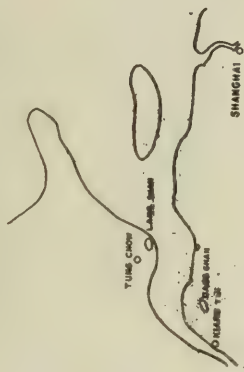


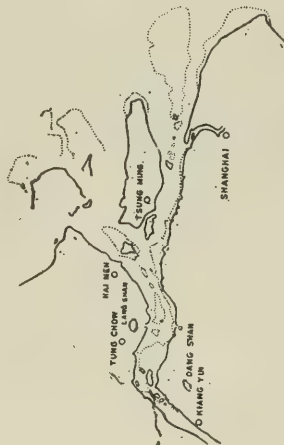
PLATE 10C



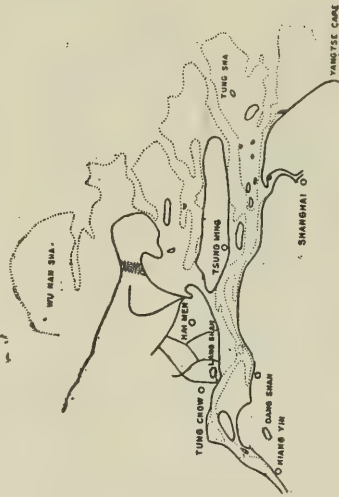
ABOUT A. D. 1100
(FROM FATHER NAVRET'S BOOK 'L'ÎLE DE TSONG MING')



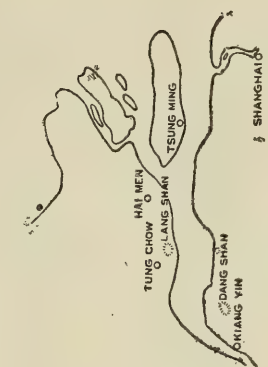
ABOUT A. D. 1670
(FROM FATHER NAVRET'S BOOK 'L'ÎLE DE TSONG MING')



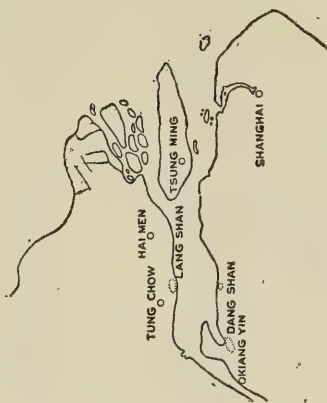
ABOUT A. D. 1842
(FROM OLD ADMIRALTY SURVEYS, COMPILED BY CUSTOMS).



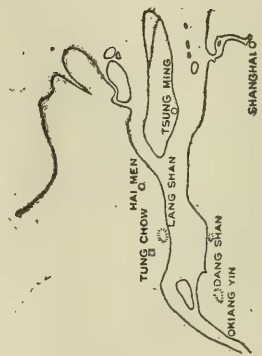
ABOUT A. D. 1860
(COMPILED BY PRUSSIAN SURVEY OFFICE FROM RICHTHOFFEN'S RECORDS & PUBLISHED IN 1904)
ALSO ON OLD ADMIRALTY MAPS



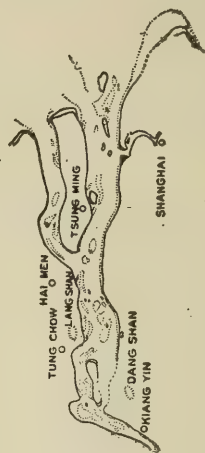
ABOUT A. D. 1865
(FROM FATHER HAVRET'S BOOK 'L'ÎLE DE TSUNG MING')



ABOUT A. D. 1880
(COMPILED FROM CHINESE MILITARY STAFF MAP BY M. Y. K. TING)



ABOUT A. D. 1890
(FROM FATHER HAVRET'S BOOK 'L'ÎLE DE TSUNG MING')



A. D. 1915
(COMPILED BY M. Y. UTNE FROM CONSERVANCY RECORDS)

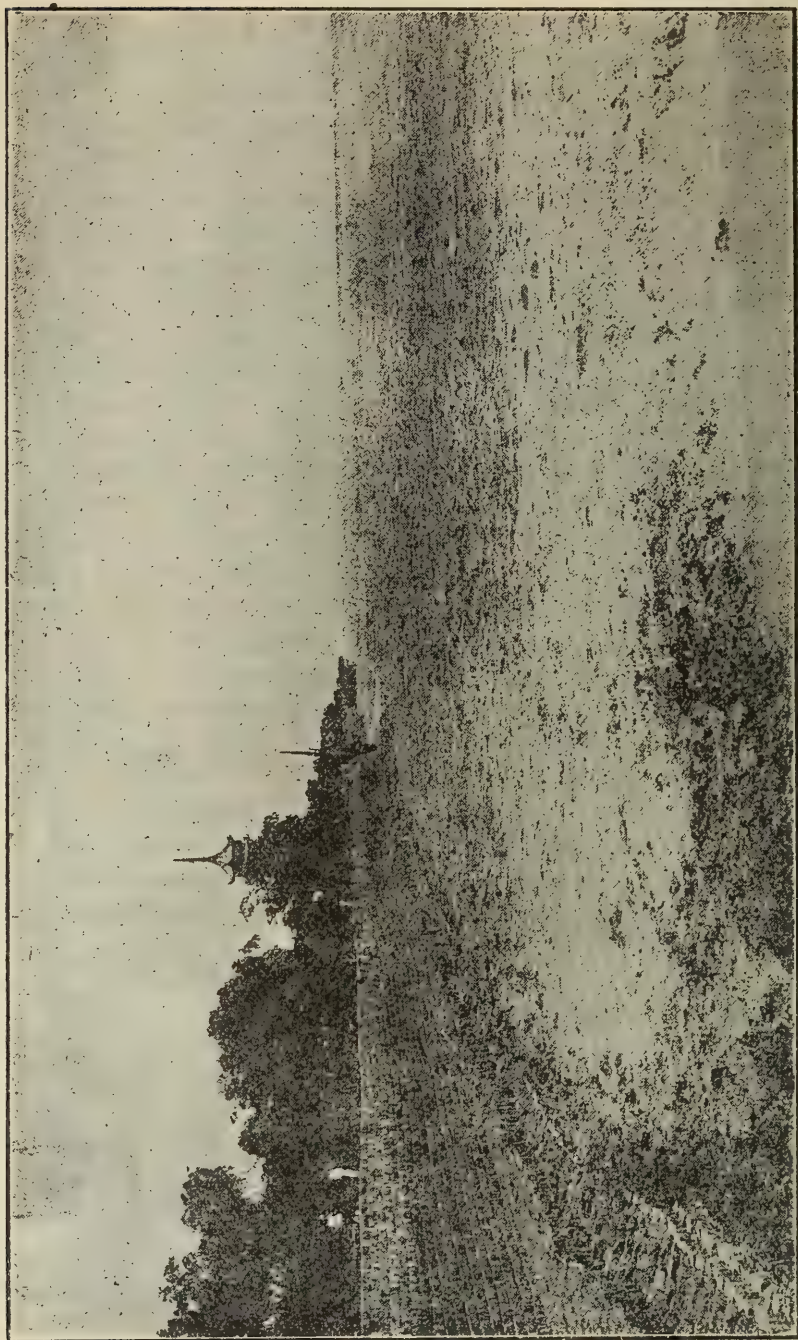
Ping-yang-sha termed Changsha, which is the core of the present island.

A chart in the Kiangnan Records shows the general arrangement between the years 1550 and 1583. The proportions are so inaccurate that no reliance can be placed upon it as to scale, but it shows clearly that at that epoch there was a number of small islands (thirteen are shown but some bear several names implying earlier subdivision) from which Tsungming Island has developed. Father Havret considers there is good evidence that the island has decreased in width since A.D. 1700. See Plate 11, 12 and 13.

History of the Northern or Haimen Promontory.—The records of Tungchou contain many references to the changes which have occurred in the neighbourhood of Haimen. It is stated that this area goes back to the second century B.C., and there was at first only a sandbank which gradually became connected with the mainland. The name Haimen was given to it in A.D. 958, at which time the city of Tungchou was built. The Haimen bank was steadily cut away by the river until in 1672 the town of Haimen was destroyed and the areas which had shrunk to almost nothing ceased to be regarded as an administrative unit. At the same time new banks began to appear in the middle of the river, half-way between Tungchou and Tsungming and became connected to the left bank. This new area was created a "Ting" with the old name "Haimen" in 1768. Since then the promontory has steadily advanced and in one hundred and ten years progressed seaward twenty-five miles. Father Havret (*Varietes Sinologiques*, No. 1, L'île de Tsongming, Shanghai, 1892), to whom I am indebted for this information, has published a map showing the probable changes of the promontory. See Plate 11, 12 and 13.

The Features of Hangchow Bay, and the Chien Tang Kiang Estuary.—Assuming that the coast line follows a line from Yangchow through Chinkiang to Hangchow, then the Hangchow Bay was a part of the sea. The outlet of the Chien Tang Kiang was at Hangchow, or Hangchow was probably on the northern side of the estuary. The hills in the coastal plain north to a line from Hangchow to Ningpo are similar to the hills in the Yangtze Delta and the island off the China coast. See Plate 14.

The delta has probably been built up largely from the silt of the Yangtze, the nature of the material being identical. The waters of the Hangchow Bay are permeated with Yangtze silt and the growth of the spits opposite Chapu and Haining are from the Bay inward. See Plate 14.



THE HANGCHOW BORE.

The silting up of the old channels, the Nan Ta Men or South Great Channel, was between Kan Shan and the Che Shan, the Pieh Tse Men or Middle Channel, was between Che Shan and Ho Chuang Shan, and the North Channel was north of Ho Chuang Shan, is probably due more to the Yangtze silt rushing in on the flood tide and encountering the ebb and fresh water discharge of the Chien Tang Kiang.

My recent investigations in the Hangchow Bay indicate a very slow accretion as a total resultant of the many forces at play. In many places erosion, in others accretion, but the latter predominating.

The Bore is the result of the delta-building in the Bay.

RESUMÉ

I could add many other points—that I have gone into—*re* the origin of the Whangpoo and the Tai-Hu, but space does not permit me to do so and most data I have are already published in the reports mentioned.

Reviewing the various evidences, hydrological and hydrographical, geological and historical, as well as the actual processes of to-day, in regard to the growth of the delta—I venture to say, and believing not to be far out—that the delta below Chinkiang has been built up in the last 10,000 years, or at most 20,000, and that the plain form. At this rate, some 1,000–1,200 years from now the Yangtze Cape will be at Gutzlaff and the familiar Island cliff will then be a hill on the plain. The same length of time will probably elapse before the Tsungming Island, or a new island outside it, has enveloped Sha-Wei-Shan, the rock and lighthouse which every northbound ship is now guided by.

Prophency is a thankless task and probably 1,000 years hence—if some members of the Royal Asiatic Society—which I hope will then continue to exist—were to look up the records of this lecture they may have cause to reflect upon what foolish prognostications have here been attempted. It is, however, interesting and useful to make an effort to form some idea of what is going on around us. As Edkins says “the same causes which have gradually produced this great alluvial plain, on which Shanghai and all the other cities on the plain were built, are still in operation gradually forming fresh land to the seaward, filling up old channels originating new ones, and by degrees increasing the elevation of the land.” Without overflowing its banks and de-

positing its sediment upon wide breadth of country, this wonderful Yangtze does its work in its Estuary quite as effectually, by the help of the powerful tides of the Pacific, which enable its mud-laden waters to enter the thousand little canals that have been made by man for the irrigation of the fields even after the main dykes are built shutting off the large river itself and the tides. The decay of vegetable matter combined with artificial irrigation raises the surface, and would, if continued sufficiently long, render the whole region at length entirely independent of the embankments made round the entire sea coast for the security of agriculture."

The rate of advance of the coast is, as I have said, somewhere about 1 mile in 60 years, on an average. In some places the coast may be stationary—in others advancing at double the rate. The figure is just a *general* average indication.

Only for very short periods ahead is it possible to predict exactly where channels are tending to form, where any way the islands or coasts grow, and again disappear, only to form again.

One thing is certain. The work of erosion will proceed in the upper drainage basin. As the intermediate basins are fairly well filled, the mouth will receive a good deal, perhaps half, perhaps much less, of the matter eroded. This process will probably continue for many thousands of years and the present delta grow.

If we suppose that one-third of the whole watershed (= 250,000 square geographical miles) consists of hillsides and other erodible area, the silt passing Wuhu corresponds to a reduction in height of one foot in 625 years, or of one mile of height in $3\frac{1}{2}$ million years. It would certainly seem reasonable to suppose that the actual denudation is at least twice that which is indicated by the Wuhu silt content, *i.e.*, that at least half the matter eroded is left above Wuhu.

As the high upland of the Yangtze is many thousands of feet high—there are many millions of years to look forward to, before the Yangtze has succeeded in levelling down its entire basin to the level of a plane.

Before this has happened, however, some new movement in the surface of the earth may change the map again and the delta formation will begin all over again on new lines in a different part of the continent, and the Estuary of the Yangtze may then be at the present Ichang or still further up.

THE SHUH COUNTRY.

Rev. J. HUTSON.

CHAPTER I.

A HISTORICAL SKETCH.

The ancients believed that rains fell regularly every night in the Shuh Country. Though this may be incorrect, still night rains are not only plentiful but often heavy, especially during the spring, summer and autumn seasons; while the winter seasons are generally dry, but dull and hazy. The proverb says that the Szechwan dogs bark at the sun (蜀犬吠日). This has been interpreted that the sun was so rarely seen in the province, that when it did appear the dogs barked at it. A T'ang (唐) Dynasty writer recorded the idea that "when the snows of 'Pa' and 'Shuh' melted then the floods came."

Shuh has also been termed by the people the "Mountain Kingdom" and its capital the "River City." These names were given owing to the high mountains which almost hid the sun during the winter season, and the rivers which not only surrounded but also intersected its capital.

The capital city, Ch'en tu, is situated 5,710 li south-west of Peking, or a distance of 46 travelling stages. The city is surrounded by a great plain, which at one time was probably a large inland lake; while the ten li plain of Kien Cheo (簡州) and the Liang Shan (梁山) plain were also smaller lakes. The districts of Kien Cheo (簡州) and P'eng Hsien (彭縣) are situated on opposite sides of the plain, and it is a strange coincidence that both places are famed for rolling stones and blowing sand. The ancient inhabitants of these regions believed that there were sea eyes (海眼) situated in Ch'en tu, and also elsewhere; which if rudely disturbed would bring a flood of water upon the land. Situated at the back of the T'ai Ts'i Ssü (太慈寺) temple, is an ancient Buddhist image on which is engraven the four characters yung chen shuh ien (永鎮蜀眼). The character is written in the "Seal" style peculiar to the Ts'in (秦) Dynasty.

The idea conveyed is that a sea eye was situated in that place; and the idol was placed over to protect it from ruthless hands and suppress the ever threatening flood. Other sea eyes are believed to be situated outside the east gate within the precincts of the Ta Fuh Ssü (大佛寺) and at Kwan Hsien, by the Fuh Long Kwan (伏龍觀) temple, under the elephant's trunk rock. On the embankment near the latter spot a stone rhinoceros is placed to quell the rising floods. Its aspect is that of placidly watching the setting moon. The proverb runs Hsi Niu Wang üeh (犀牛望月), "The rhinoceros watches the moon." The ancients believed that the sun was fire and the moon water, hence the latter was believed to have something to do with the rise and fall of the floods.

From the time of Hsia Yü Wang (夏禹王) (2205 B.C.) the sub-prefecture of Liang Cheo (梁州) included the Kingdom of Shuh.

In the Cheo (周) Dynasty period (651 B.C.) Ts'an Ts'ung (蠶叢) was King of Shuh.

In the reign of Ch'en Ts'in (慎靚) (241 B.C.) the Ts'in (秦) Dynasty Rulers overthrew the King of Shuh, and made his territory into a prefecture (郡) with its provincial headquarters at Ch'en tu.

During the Han (漢) Dynasty the country was still known as the prefecture of Shuh, and was governed by the I Cheo (益州) sub-prefect. In the latter Han (後漢) period Kong Seng Su (公孫述) took possession of Ch'en tu and proclaimed himself King of Shuh, and changed the status of the city from Shuh Chiün (蜀郡) to Ch'en tu Yin (成都尹); but after a time K'ong was subjugated, and the country again became known as Shuh Chiün (蜀郡). In the reign of Hs'in P'ing (興平) (A.D. 194) a certain Lui Yen (劉焉) from Mien Chuh Hsien (綿竹縣) took the city.

At the close of the reign of Kien An (建安) (A.D. 196), Chao Lieh Ti (昭烈帝) set up his kingdom in Shuh.

In the Wei (魏) Dynasty and the fourth year of the Emperor King Yüan (景元) (A.D. 260) the Shuh country passed to the Wei (魏) Dynasty.

In the Chin (晉) Dynasty the Emperor T'ai K'ang (太康) (A.D. 286) made his son King of the Kingdom of Shuh.

In the second year of the Emperor T'ai An (太安) (A.D. 302) a rebel named Li Hsiong (李雄) set up his standard of revolt in the country, and was not subdued until the 3rd year of the reign of the Emperor Yin Ho (永和) (A.D. 345), and Shuh again fell into the hands of Fu

Ts'in (苻秦) in the reign of the Emperor Ning K'ang (苻苳) (A.D. 363), but it reverted to the Chin (晉) in the eighth year of the Emperor T'ai Ho (太和). During the Song (宋) and Ts'i (齊) Dynasties there is nothing of great importance recorded about the Shuh Kingdom.

In the Liang (梁) Dynasty in the reign of Ta Pao (大寶) (A.D. 550) the King of Wu Ling (武陵王) whose name was Ki (記), set up his throne in the city of Ch'en tu.

During the Western Wei (西魏) period and in the second year of the reign of Fei Ti (廢帝) (A.D. 552) the country again reverted to the Wei Dynasty.

During the latter Cheo (後周) Dynasty a Tsong Kwan Fu (總管府) governed the country.

In the Sui (隋) Dynasty and in the reign of K'ai Huang (開皇) (A.D. 581) the terms Chüin (郡) and Cheo (州) were discarded and a Si Lan Hsing-T'ai (西南行臺) established in their stead, which only lasted for three years, when the title Tsong Kwan Fu (總管府) was again adopted.

In the first year of the Emperor Ta Nieh (大業) (A.D. 605) the term Tsong Kwan Fu was again discarded and the title of Shuh Chüin (蜀郡) was revived.

In the T'ang (唐) Dynasty and the first year of the reign of the Emperor Wu Teh (武德) (A.D. 618), the title of I Cheo Tsong Kwan Fu (益州總管府) was given to the city and country. This title was adopted for three years when the title of Si Lan Tao Hsing T'ai (西南道行臺) was again revived.

In the ninth year of the Emperor Hsing T'ai (行臺) the title adopted was Tu Tuh Fu (都督府).

In the first year of the reign of the Emperor Chen K'wan (貞觀) the title was again changed to Kien Lan Tao (劍南道).

In the second year of the reign of the Emperor Long Soh (龍朔) (A.D. 661), the city was raised to the rank of a Ta Tu Tuh Fu (大都督府), but in the second year of K'ai Yuan (開元) it was again changed to a Kien Lan King Lioh Shi (劍南經略使) and seven years later it became a Tsieh Tu Shi (節度使) with a Resident Governor.

In the first year of the reign of the Emperor T'ien Pao (天寶) (A.D. 742) the country again became known as the Shuh Chüin (蜀郡).

In the fifteenth year of his reign the Emperor T'ien Pao (天寶) himself took refuge in the city.

In the reign of Chi Teh (至德) (A.D. 756) the city became known as the Lan King (南京) with a resident

governor who was known as the Kien Lan Sī Ch'uan Tsieh Tu Shi (劍南西川節度使).

In the first year of Shang Yüen (上元) (A.D. 760) the status of a Provincial Capital was again taken away.

In the Wu Tai (五代) period the rebels, Wang Kien (王建), and Meng Chī Siang (孟知祥), declared their independence in the city of Ch'en tu.

In the Song (宋) Dynasty period (A.D. 960) the city first became known as Ch'eng Tu Fu (成都府). In the Yuan (元) Dynasty it was called Ch'en Tu Lu (成都路) or the Circuit of Ch'en tu. It was also called Chong Shu Seng Chi (中書省治). In the reign of Chi Chen (至正) (A.D. 1341) a certain Ming Yü Chen (明玉珍) took possession of the city and country and changed the name of the capital to Ch'en Tu Ts'ī Shi Fu (成都刺使府).

In the Ming Dynasty (明朝) the city was again called Ch'eng Tu Fu (成都府).

In the Ts'ing (清) Dynasty the city was known as the Ch'eng Tu Seng Chi (成都省治).

During the reign of the Emperor K'ang Hsi (康熙) the Ch'en Tu and Hua Yang Hsien's were amalgamated, but in the reign of the Emperor Iong Chen (雍正) the Hua Yang Hsien (華陽縣) was again resuscitated.

CHAPTER II.

THE CAPITAL OF SHUH.

The present city wall of Ch'en tu is not the wall which existed in the T'ang and Han periods; the ancient walls having been destroyed many centuries before. The ancient city included a much larger area than the present city. The Hua Yang (華陽) Annals record the fact that in the Han Dynasty, at the close of the reign of the Emperor Yüin Ts'u (永初) (A.D. 107) when they built the city wall, each of the four gates had large main roads leading to the city extending out for a distance of 20 li. The Ch'uang Choh Loh Ch'eng Ki (樞輦羅城記) records that in the T'ang (唐) Dynasty the city was only 25 li in circumference.

The Chang Yüin Ki (張詠記) records that at the close of the T'ang Dynasty the city was 36 li in circumference.

The Li Hao Yang Ma Ch'eng Ki (李昊羊馬城記), also records that the new city was 42 li in circumference.

The Chao Pien Ch'eng Tu Ki (趙忭成都記) records that in the Wu Tai (五代) period (A.D. 907) Meng Heo Chu

(孟後主) had the city walls planted with the Hibiscus *Fu Long* (芙蓉花), thus making the whole stretch of 40 li one long flower garden. This gave to Ch'entu the poetical name of *Iong Ch'eng* (蓉城) or "hibiscus city" which it carries to the present day.

The present city wall is only 23 li and 3 fen in circumference, but according to what the Chinese reckon reliable information, the *Chao Choh Sz* (照覺寺) temple, now situated outside the North gate, and the *Wu Heo Sz* (武侯寺) temple, now situated outside the South gate, were both at one time included within the city walls, and have remnants of the ancient walls situated near them. Marco Polo's description of Ch'en tu city is also very different from what it is at the present day.

In the 27th year of the reign of the Emperor Kuang Hsü (光緒) it is reported that an ancient bridge was excavated within the precincts of the *Sheo Pi* (守備) Yamen, and is called the *Wu Yin K'iao* (無影橋)¹ and doubtless many more could be found if time and money were expended in excavation.

THE MAN CHU CITY.

The Man Chu city is called the *Shao Ch'eng* (少城), but is not the *Shao Ch'eng* (少城) which existed at the time of Ts'in Chang Ni (秦張儀) (A.D. 107), that having been destroyed during the insurrections of the Sui (隋) Dynasty period. The present city is situated in the west side of the main city and is also known as the Inner City (內城). This inner city was built in the 57th year of the reign of the Emperor K'ang Hsi (康熙) and is four and half li in circumference; its walls are thirteen and a half feet high. It is provided with five gates, including the West gate of the main city which is included within its walls. The city was purposely built to accommodate the resident Manchu garrison; each banner governed a street and three alleys, which were used for billeting the soldiers under that particular banner.

The formation of the city is said to have been laid out in the form of a centipede (*Wu Kong* 蜈蚣). The Tartar General's Yamen was reckoned to be the head; the main street which runs to their North gate was looked upon as the back bone; and the side alleys used for the accommodation of the soldiers were looked upon as the legs of the insect. The streets of this little city are wide, quiet and

¹Some Chinese doubt the existence of this bridge.

cool. Trees and flowers abound, and it is the most select residential part of the city, for even the voice of the turtle dove may be heard in its woods.

THE IMPERIAL CITY.

The present Imperial City or Huang Ch'eng (皇城) was built by the first Emperor of the Ming Dynasty (明太祖), who had about twenty sons, to each of whom he contrived to give an Imperial palace and city. This Imperial city and palace has no connection with the ancient Shuh Kings of the Wu Tai period; nor has it any connection with the palace of Meng Heo Chu (孟後主) who had his headquarters in the city; but was originally meant to be the residence of the Ming prince (椿), the eleventh son of the first Emperor.

The wall of the Chinese city as it now stands dates from the Ming Dynasty, but it was thoroughly repaired in the Ts'ing Dynasty in the reign of the Emperor K'ang Hsi (康熙) (A.D. 1662). Its height is thirty feet, its thickness eighteen feet, its circumference is twenty-two li and three fen, or 4,014 chang.

The female walls (女城) have 5,538 embrasures.

The distance across the city from the east to the west gate is nine li and three fen; and from the south gate across to the north gate the distance is seven li and seven fen. The wall was again repaired in the forty-ninth year of the Emperor K'ien Long (乾隆). At that time the Viceroy Fuh K'ang An (福康安) commanded that the walls be replanted with the hibiscus shrub in order to imitate the ancient Kings of Shuh, and make the city worthy of its poetical name. In former times the walls were open all round the city and any one could walk round it; but of late years the arsenal and military authorities have erected buildings thereon which makes a circuit of the city quite impossible. The guard houses and watch towers over the city gates were repaired by Viceroy K'wei (奎俊) in the reign of the Emperor Kuang Hsü (光緒). In the early years of the Republic two new gates were opened, one in the south-west and another in the north-east corner of the city. So the city has now six gates instead of the historical four.

The river which flows through the city is said to date from the T'ang (唐) Dynasty and was originally called the Kin Ho (金河), but at the time when the Ming prince resided on its northern bank its name was changed to the Kin Shui Ho (金水河).

In the ninth year of the Emperor Yung Chen (雍正) a new river was opened by the three bridges and around the Imperial city which was called the Yü Ho (玉河) but alas, it is now choked up with rubbish.

Prior to the revolution the population was said to be composed of Moslem 2,594; Manchu 3,976; Foreign 100; Chinese 350,000. These figures may now need to be revised especially as regards Manchu and foreign elements; the former may have decreased and the latter considerably increased.

CHAPTER III.

RELICS OF ANTIQUITY IN THE CAPITAL OF SHUH.

The stepping stone (上馬石) for springing into the saddle is situated in the Ta T'ong Kiai (打銅街) just outside the residence of the Sih (席) family, and is known by the people as the Shang Ma Shi (上馬市) or "Mount the horse market."

The Ku Shih P'ai Fang (古石牌坊). The ancient stone archway is situated in the Hong Shih Chu (紅石柱) street. This archway is erected across the street; all other ornamental arches being erected to face the street, in order to facilitate the passage of official retinues. As this is the only exception to this rule, the archway is likely to be of ancient origin. The Feng Hua Kwan (奉化館) temple was the property of the aboriginal chiefs in the Ming Dynasty. The timbers and bricks all date from this period.

The iron heap (鐵堆). In the Ch'en tu and Hua Yang Hsien Yamens, there is a lump of iron partially buried in the earth which bears the above names. Its shape is said to resemble a Chinese hat box.

The iron window sill (鐵窗板) is situated outside the east water gate, where there is an iron bridge built of three iron bars, each about five or six feet long, one foot wide, and four inches thick. These are said to be the iron window sills used during the Song Dynasty.

The Shuh Han Chao Wall (蜀漢照牆) is the wall in front of the Prefectural Yamen, and is a relic of the three kingdom period, when Liu Pi (劉備) was the hero of Shuh.

The red stone pillar (紅石柱) is a single red stone pillar set up at the entrance to the street bearing this name, and is believed to be of very ancient origin.

The T'ien Iai Shih, the horizon stone (天涯石) is situated in the street bearing this name, and in a temple where it is

superstitiously worshipped; its devotees are so plentiful that it is said that the incense sticks are rarely ever extinct. The stone is believed to have flown from the uttermost part of the heavens, and is most likely to be of meteoric origin.

The weavers stone (支機石) is a large stone situated in the centre of the inner city, and is believed to have been there since the Han Dynasty. The legend concerning it runs as follows: A certain official named Chang K'ien entered the milky way (天河), where he met the weaver star goddess. The goddess presented him with a stone and instructed him to take it back to Ch'en tu and ask Nien Chüin P'ing (嚴君平) to explain its meaning to him.

This stone probably also is of meteoric origin. Nien was a famous logomantic scholar, who opened his door and earned one hundred copper cash daily, after which he closed his door and devoted himself to study.

The wash horse pool (洗馬池) is situated in the present Loh Kong Ts'ï (駱公祠) street, just behind the tax office. This pool became famous during the three kingdom period when General Chao (趙將軍) washed his horses there. It is also called the Tsï Long (子龍塘) pool, after this famous general.

The pool of Mo K'o (摩訶池) who was one of the Buddhist apostles. This pool is situated in the Imperial city, and is believed to be a relic of the Sui (隋) Dynasty (A.D. 600).

The wash-ink-pool (洗墨池) had its origin in the Han Dynasty, when a famous scholar named Yang Hsiong (楊雄) lived and taught near this spot, and probably washed his ink slab there.

The well of Hsioh T'ao (薛濤井), a famous female scholar, who lived in the T'ang Dynasty. This well is said to be situated outside the east gate near the Wang Kiang leo (望江樓). It is stated that this is the spot where Hsioh T'ao (薛濤) made and dyed her own paper. A certain Ma Shao Hsiang (馬少紉) built a pavillion and planted trees around the spot; this pavillion being called the wash paper pavillion (浣箋亭). The same gentleman also built a loft and called it the sing poetry loft (咏詩樓). Closely connected with the foregoing buildings was a pool of water which was called the Liu Pei Ch'i (流杯池). A cup filled with wine was placed on the surface of this pool; while the guests stood around waiting for the cup to be wafted ashore, and to whomsoever the cup came, the same had to drink the wine it contained. A likeness of Hsioh T'ao was carved and placed in the adjoining loft at the same period.

The grave of Hsioh T'ao (薛濤墳) is said to be situated outside the east gate of the city near the Wang Kiang leo (望江樓) and is now surrounded by a vegetable garden. The poet Chen Koh (鄭谷) said that "a peach grove surrounded her grave." She was a woman of wonderful ability; but of questionable moral character. She was much patronised by the Governor of the time, because of her poetic and musical gifts.

The bridge of Sī ma (駟馬橋) is situated outside the north gate. On this bridge, it is stated, that the scholar Sī Ma Hsiang-ru (司馬相如) wrote his verses and posted them up. He was a poor scholar who was leaving his home in Ch'en tu for the capital in the north, and as he passed over the bridge he wrote: "If I do not return in a high chair may I never cross this bridge again." He went to the capital and had a successful official career and returned and crossed the bridge in official style. The hibiscus bridge (芙蓉橋) is a structure dating from the time of Meng Ch'ang (孟昶) and his son Meng Heo Chu (孟後主) (A.D. 960) or even earlier. It is situated in the Shan Si Kiäi. The pavillion of Meng Heo Fei (孟後妃), wife of Meng Heo Chu is situated at Kwan Hsien, on the opposite side of the river to the Fuh Long Kwang, and just below the gorge. This was either her birth place or dwelling place, and may have been both.

The grave of Liu Pi (劉備) (昭烈陵). This is situated in the Wu Heo Sī (武侯寺). It is most likely that only his clothing and official paraphernalia were interred here. His body most likely being interred in Hu-peh, where he died after his defeat by Wu (吳國) troops.

The sepulchre (桂溪寺皇墳) of Ning I (甯宜), a eunuch of the Ming Prince, whose palace was in Ch'en tu. His assistant eunuch Cheo K'i (周琦) is also buried in the same place. The situation of the grave is ten li outside the east gate at (高板橋).

The grave of Ho, husband and wife (何公何母墳) is situated outside the south gate and dates from the Ming Dynasty. Two patriots who may have resisted remained loyal to the last.

The hundred flower pool (百花潭) is situated outside the south gate of the city near the temple (二仙菴), now known as the Pao Yuen An (寶雲菴). This relic is said to date from the T'ang Dynasty.

The wash silk loft (濯錦樓) is situated on the east side of the city, and on the site of the present Wang Kiang leo (望江樓).

The green sheep palace (青羊宮), is situated five li from the south gate on the south-west corner of the city. The building dates from the T'ang Dynasty. The chief deity therein is Li Lao Kün (李老君), the founder of the Taoist Sect, and the reputed ancestor of Li Ping (李冰). There are also two copper sheep images, believed to date from the Ming Dynasty, and are said to have been used by an official for fumigating his official robes. It is also stated that this temple was at one time a christian monastery (probably Nestorian) and the two sheep were left there by the missionaries. In this temple there is also an incarnation stage (降生臺), and preaching stage (講經臺), all of which have reference to Lao Tsi (老子) and the Taoist sect.

The relics of San-feng (三丰遺跡) who is reputed a Taoist celestial. In the temple known as the Erh Sien An' (二仙菴) there is a stone wall on which is sketched a picture of a dragon and a snake. This is believed to have been sketched by the hand of Cheng San Feng.

The brass drums (諸葛銅鼓) of Chu Koh Liang (諸葛亮). This relic of the famous hero is kept in the Wu Heo Si (武侯寺) temple, before the image of Wu heo (武侯) which is a deification of the hero Chu Koh Liang himself. There is one large and one small drum; relics of his wars on the southern frontiers.

The Wash Flower Stream (浣花溪) is situated five li south of the city; near a temple known as the Ts'ao T'ang Si (草堂寺). In the T'ang Dynasty this was a favourite place of recreation for city people. It is said that in the above temple an image of a woman named Ren (任) is to be found. Legend says that this woman when a girl when washing clothes in the stream, saw a priest fall into the stream and soil his garments. The girl immediately volunteered to wash them for him; and as she washed them white bubbles rose to the surface of the water; so ever after the stream bore the name of Huan Hua K'i. The story also states that in the course of time a governing official married her as one of his concubines.

The ten thousand li bridge (萬里橋) is the large bridge situated just outside the south gate which is said to have been in its present position in the Han and T'ang Dynasties, though it has often been repaired in the long interval.

The palace of the king of Shuh (蜀王宮). This is inside the Imperial city, and was the palace of the eleventh son of Hong Wu (洪武) (the first emperor of the Ming Dynasty) who was sent to govern Shuh as a subsidiary

prince. The walls and timbers are all of Ming times and built for this prince about A.D. 1368.

The ancient writing of the "Seal" style (古太慈寺秦篆) dating from the Ts'in (秦) Dynasty; and supposed to be the hand writing of Li Ping. The T'ai Ts'i Si temple is situated near the east gate of the city and dates from the Ts'in Dynasty. There is an ancient idol in the centre of the reception hall, and near by it are the four characters (written in the Seal style of that period) perpetually guarding the sea eye (永鎮海眼).

COPY OF TABLET.

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|---------------------------------|---------------------------------|---------------------------------|
| 殺 殺 殺 殺 殺 殺 殺 | 人 無 一 物 以 報 天 | 天 生 萬 物 以 養 人 |
|---------------------------------|---------------------------------|---------------------------------|

The tablet of the Seven Kills of Chang Hsien Chong (張獻忠七殺碑) is situated in the Yamen of the Ch'en tu Hsien. On the tablet the character Shah (殺) to kill, is inscribed seven times and was probably written by his own hand.

This tortoise and snake tablet (龜蛇碑) is credited with a Han Dynasty origin, and represents the snake and tortoise fighting. This tablet is situated in the Ch'en tu prefectural Yamen.

The observatory of Chu Koh Liang (諸葛亮觀星臺) is also situated in the prefectural Yamen, and now used as a judgment hall. There is a stone slab erected to mark the spot.

The kneeling iron idols of the Tai Miao (岱廟鉄人跪像) are situated inside the Shansi Kiai (陝西街). The two images are in a kneeling posture facing each other. The one on the right side has lost the scalp of the head.

The white pagoda of the Huei Lan Si temple (迴瀾寺白塔) is situated on the east side of the city, near the nine-eyed bridge and is reckoned to be a very ancient pagoda, but is now very delapidated. There is a "huei lau" pillar (迴瀾) with a stone rhinoceros clamped to its upper end, erected near the Fuh Long Kwan temple Kwan Hsien.

The stone ox and iron lion temple (石牛寺之鉄獅), is situated near the south gate of the city. The iron lions belong to the Han Dynasty and were originally used to quell the floods.

The Li Wen Rao Ch'ou Pien Ch'u (李文饒籌邊處) the spot where Li Wen Rao (李文饒) calculated where the Western boundary of Shuh should be. This spot is said to be within the precincts of the temple (銅鐘閣) close to the east gate of the city. The boundary is said to have been Ta Tsien Lu.

The ancient residence of the famous scholar Yang Hsiong of the Han Dynasty (楊雄故宅). This place is now included in the courts of the Ch'en Tu Hsien Yamen.

The ancient residence of Yang Shen An (楊升菴古宅), a Senior Wrangler of the Ming Dynasty. It is situated near the south gate of the city, in the Chuang üen Kiai (狀元街), close to the Hu Kueh An (護國菴) temple. Yang Shen An (楊升菴) was the only Sz ch'uan Senior Wrangler during the Ming Dynasty. In Manchu times there was likewise only one such successful scholar, Luh Chen Hsiang (駱成驤) of Tsi Cheo.

The golden horse and crystal chicken arch (漢金馬碧雞坊). In the Han period there was a golden horse idol. The position of this temple was near by the present Golden horse street (金馬街). The thatched hut (草堂寺) of Tu fu (杜甫), a poet and scholar of the T'ang period, was situated here.

The present temple is situated on the south side of the city near the Huan Hua K'i (浣花溪), was first erected in the Sung Dynasty, in memory of the famous scholar, by an official named Lu Ta-fang (呂大防). It was repaired during the reign of the Emperors Ch'ien Long (乾隆) and Kia Ch'ing (嘉慶). The ancient grave of Ts'an Ts'ong (蠶叢古墓). In the Cheo (周) Dynasty the reigning house could not coerce the native kings (王). Ts'an Ts'ong was the King of Shuh. His grave is said to be situated near the Sheng Sheo Si (聖壽寺) to the east of the Kin hua bridge.

The stolen silver of Chang Hsien chong (張獻忠賊銀). When the famous brigand was pressed by the Manchu troops he left Ch'en tu for the South by boat carrying the silver and the gold he had plundered throughout the province with him. The story goes that all went well till he reached the deep water at Kiang K'eo (江口) where this treasure fell through the bottom of the boat and sank, unrecovered to this day. Owing to the fabulous stories as to the value of this treasure a viceroy of the late Manchu Dynasty memorialised the throne asking for permission to salve this bullion, but owing to public sentiment being strongly against the project it was never carried through and the silver still lies there.

The Buddha's grave (佛塚). When Chang Hsien Chong was in possession of Ch'en tu city, he set up a mint to coin

copper cash. For this purpose he seized all the copper wares he could lay hands on, such as urns, tripods, vases, etc., which included all the copper wares belonging to the Imperial palace. He also collected all the copper idols, and other idolatrous vessels, and melted them. It is said that the heads of the copper Buddha's would not melt so he threw them aside. During the Tsing Dynasty these heads were collected by the prefect I (冀) and buried in one grave outside the north gate of the city, and a tablet was erected bearing the inscription "Fuh Chong" (佛塚). It is thought more likely that the brigand purposely threw these heads aside, since he delighted in seeing human heads around; and the heads of the gods would go to show the people that he feared neither gods nor men.

The well of Chu Koh Liang (諸葛亮). This well is situated in the street known by this name, and was dug at the command, and for the sole convenience, of the great warrior.

The five load hill (五擔山) which is also called the Wu tang shan (五當山) and Wu tan shan (武擔山). Legend says that this is the grave of one of the Kings of Shuh who reigned during the Three Kingdom period. It is situated near the north parade ground.

This market town of T'ien Huei Chen (天回鎮) is situated thirty li distant from the north gate. In the T'ang Dynasty (A.D. 713) the Emperor K'ai üen (開元) had to flee from his capital Ch'ang An (長安) in Shensi. On reaching this town he learned that his capital had been retaken by his general and troops. So he returned, and the town has ever since borne the name of T'ien Huei Chen.

The ancient agricultural market (古農市) is now occupied by a tutelary god temple (土地).

The stone house of Wen Ong (漢文翁石室), who was governor of Sz'ch'uan during the Han Dynasty and introduced the study of literature into the province. His family name was Su (舒), and his former residence is now included in the grounds of the prefectural Middle School.

The ancient stone bamboo sprouts (古石筍) are situated outside the east gate in the street called by that name.

The ancient flowing river pool (古江濱池) which is now known as the Shang lien ch'i (上蓮池). In the reign of Meng Heo Chu (孟後主), an official planted a lotus in the centre of the pool, while all around the pool was adorned by the hibiscus and the weeping willow.

The grave of Liu Pi's (劉備) wife (照烈皇后甘夫人陵), whose family name was Kan (甘). The grave is situated in

the Wu heo sī (武侯寺) temple; close to the nominal grave of Liu Pi.

The bridge of the Han market (漢市橋). This bridge is now known as the Kin Hua K'iao (金花橋). It is situated outside the west gate and legend says that its foundations are laid on stone rhinoceri.

The burying place of the robes of Kwan ti (關帝) (關帝衣冠墓). This relic is situated outside the south gate of the city.

The burying place of the robes of Chang Fei (張飛) (張桓侯衣冠墓).

The grave of Wu In Heo (舞侯侯) (舞陰侯岑彭墓) whose name was Ts'en P'eng (岑彭). This ancient grave is situated outside the east gate in the region of the Yün Hsing K'iao (永興橋). In the 29th year of the Emperor Kuang Hsü, Viceroy Ts'en Ch'uen Sün (岑春萱) repaired and sacrificed at the grave, thus claiming descent from this ancient stock.

The yamen of the ancient Hsün-an-ü-shī (故巡按御史署). This is now included in the present Hsioh yüan (學院). The temple of the Ming Dynasty Kwan-ti (明關帝廟), is situated near the south gate in the San Hang-tsi (三巷子) street.

The temple of the Kiang-toh (秦江濱祠). During the Ts'in Dynasty China had four drains, viz. Kiang (江), Ho (河), Huai (淮) and Tsi (濟). This hall was destroyed at the end of the Ming Dynasty, but restored again under the Manchus, and is now known as the Kiang-toh-miao (江濱廟).

The Ming Long-k'ing-t'ong-fan-lu (明隆慶銅燔爐) is a bronze urn dating from the Ming Dynasty and the reign of Long K'ing (隆慶), (A.D. 1567). This urn is placed in the Long Wang (龍王) temple. It has three feet, two ears, and its colour resembles black varnish.

The Kiang-toh-sī-t'ong-chong (江濱祠銅鐘). A brass bell situated in the Kiang-toh-miao (江濱廟) which is said to have been moulded in the Ming Dynasty by the Fan (藩) tribes of Shuh.

The divan of the bronze Buddha (銅佛座). In Ch'en tu there are two bronze Buddha's and two bronze divans. These may be found in the T'ai-ts'ī-sī (太慈寺) and Ku-fuh-sī (古佛寺) respectively.

The copper well (銅井), is situated in the Imperial city, and is a well which belonged to the Shuh Fan (蜀藩) tribes in the early Ming period. There is also a well with a copper bottom, but the two must not be confounded, as the latter may be found in the T'ong-tsing-hang (銅井巷).

The iron flower vase (鉄花瓶). This relic is situated in the T'ai-ts'i-si (太慈寺). It is about three feet in height and was manufactured during the Ming Dynasty.

The iron lotus candlestick (鐵連蓋) was also manufactured during the Ming Dynasty and the reign of Ch'eng Hua (成化) and is now placed in the T'ai-ts'i-si (太慈寺) temple.

The iron urns of the Ming Dynasty (明鐵罐). One is three feet in height and another four feet. They are placed in the academy of the Ch'en tu prefect.

The iron Confucian image (鐵鑄孔聖像) is deposited in the Hong-miao-tsi (紅廟子) (red temple) and is said to be of T'ang Dynasty origin. In Japan in the Shang-ie (日本上野廟) museum there is another image similar to this one, but in Sz ch'uan this is said to be the only iron image of the sage, and it is of great interest and value. Situated in the Kiang-toh-miao (江濱廟) are several Ming Dynasty relics, dating from the reign of the Emperor Ch'eng Hua (成化), (A.D. 1465). The three following statesmen of Shuh are credited with superintending the work, viz., Ch'eng Fung Si (承奉司), Ch'eng Fung Cheng (承奉正), and Song King (宋景). Such articles as the following are included among these relics: braziers, urns, flower vases, lotus flowers, etc. All are made of iron.

This an ancient bell (東野寺古鐘) is situated in the San-huei-si (三會寺). In the Yuen-long-si (雲龍寺) temple there is also a large bell which measures eight feet in height.

In the Sin-p'ing-chuan (信平莊), otherwise known as the Kwan-in-si (觀音寺), there are some ancient K'in (磬) or hand bells. There are also iron flower vases at the Wang-kia-si (王家寺). These stand about three feet in height and are adorned with ears.

In the Siao-t'ien-choh (小天竺) there is a small miniature pagoda, about five and half feet in height, and is reckoned to be of fine workmanship.

In the Kuang-fah-si (廣法寺) an ancient earthenware tripod is still to be seen.

In the Wen-ch'ang-kong (文昌宮) there is an ancient copper image of Confucius, also an image of Buddha, made of equal parts of copper and silver.

There is also an iron image of Lao Kün (老君) situated in the San-kiao-an (三教菴). The Ts'ong K'ing Wang (崇慶王) was the T'ien K'ing Wang, whose capital was in the old city of Ts'ong K'ing Cheo (崇慶州). Parts of the old city walls are still visible. His palace was in the T'ien-t'si-si (天齊寺) the front of which is still standing. His grave is at Liao Ch'ang (廖場).

CHAPTER IV.

CUSTOMS PREVALENT IN SHUH DURING THE YUAN
DYNASTY (A.D. 1280-1368).

In ancient times the city of Ch'en tu was the chief centre for the pleasure-seeking inhabitants of Western Shuh. Owing to the city being large, and luxuries of every kind being plentiful, it naturally became the gathering place for the aboriginal tribes, who completely peopled the province at this period. The customs of the people were largely bound up with gaiety and pleasure as the following lines will try to show.

When the T'ai Sheo (太守) or prefect held a feast his followers were many, and the official conveyances of varied and pretty colours. The actors performed as he entered and left the banquet hall. The jugglers came from all quarters and were admitted to the banquet hall to perform their feats before him in regular rotation. At the New Year season there were certain fixed customs to be observed, and at such times crowds of men and women, all dressed in their best holiday attire, came forth to enjoy the celebrations. The aged and young were piloted by the robust and able bodied through the dense crowds, and eventually placed on high stools, or other places of vantage, so that they might view the decorations, and the official celebration of the great annual feast.

At this season the T'ai Sheo (太守) assumed the position of Ao T'eo (鰲頭), or master of ceremonies, when the following programme was carried through. We are indebted to the ancient writer Fei Chu (費著) for this description of the year's festivities.

FIRST MOON.

1st day.—Early in the morning of this day the people stuck small flags all over the sides and top of the pagoda situated in the An Fuh Sī (安福寺) temple. When the work was completed the whole structure was covered like scales on the skin of a fish. On the top of the pagoda were lanterns, which were lighted at dusk, while the Buddhist priests chanted. At this time, Buddhism was at the zenith of its influence and power, and its priests abounded everywhere. The T'ai Sheo (太守) had his banquet spread in front of the pagoda. In the afternoon he ascended the pagoda to scan the face of the sky in search of omens for the coming year.

This celebration was held with the idea of avoiding calamity and bloodshed by appeasing the spirit of the New Year.

2nd.—On this date, the T'ai Sheo had breakfast on the east side of the city, at the I Chong Sī (移忠寺). He had dinner at the T'ai Ts'ī Sī (太慈寺); after which the female slaves served tea. During this interval a certain Cheo Chi Shuen (周之純) of Kuing Cheo (印州), who was a famous poet and musician, usually sang ballads of his own composition, and also taught the female slaves to sing these ballads.

5th.—On this date the silk worm market was opened. In ancient times the Shuh King Ts'an Ts'ong (蠶叢) began to feed the silk worms on this date. The T'ai Sheo (太守) spread a banquet on the silk worm market in memory of Ts'an Ts'ong (蠶叢), who was greatly honoured. The whole Province at one time being called the Kingdom of Ts'an Ts'ong.

15th.—This was called the Shang Yüan Tsieh (上元節), or lantern festival. Ancient writers record the fact that T'ang Ming Huang (唐明皇) observed this festival in Si An Fu (西安府).

The story goes that a certain taoist priest informed him that the lantern festival celebrations in Ch'en tu excelled his in grandeur. On the Emperor refusing to believe his word, it is said that the priest transported him to Ch'en tu by means of some magic trance, showed him the illuminations, and took him back again to his Capital. In the reign of Han T'ong (A.D. 860) it was customary to begin the festival on the second day of the New Year. At this time there were musical performances day and night for half a month. It is said, however, that these prolonged celebrations were only held in years of peace and plenty. The Shuh King, Meng Ch'ang (孟昶), also observed the feast of lanterns; but no dates were fixed for its commencement. In the Sung Dynasty, the reign of K'ai Pao (開寶) (A.D. 968), a decree was promulgated to the effect that the lantern festival was to be observed for three nights only; so from that time onward it has been the general custom to observe the festival for three nights only. In the Yuan (元) Dynasty the T'ai Sheo kept this festival by dining at the T'ai Ts'ī-sī in the morning, and at the Wu Men Leo (五門樓) in the evening.

On the evening of the 14th the T'ai Sheo viewed the Ao Shan Teng (鰲山燈). The hour at which the celebrations closed depended wholly upon the will of the T'ai Sheo. The most highly decorated and brilliantly lighted place being the Chao Choh-sī (昭覺寺). At a later date Chang Kong-ün (張公詠) arranged a gathering for winding up the lantern

festival which was held on the seventeenth day of the moon, when the T'ai Sheo dined with the leading military officers, as a recognition of their services in maintaining peace.

23rd.—On this date Chang Kong-ün (張公詠) held a gathering and gave a banquet at the Sheng Sheo-si (聖壽寺) on the spot where the silk worm fair used to be held, and where the farmers gathered to purchase the necessary farming implements for the coming year's operations. The T'ai Sheo first offered sacrifice before the image of the Tu An Wang (都安王), after which he went to a feast which was spread in the Loh-süh Yuen (樂俗園) which was situated near the Wan-li K'iao.

28th.—The legendary belief was that this is the date of the birth of the Pao Sheo-heo (保壽侯), Marquis of longevity; therefore the T'ai Sheo proceeded to the temple erected to his memory and sacrificed; after this he proceeded to the temple erected to the memory of Tu Ch'eng Siang (杜丞相) (of the state of Ping (邠) (1134 B.C.) and worshipped. After his sacrificial duties were finished he dined at the Wan Y'en Ta Ch'i Yuan (晚宴大智院).

SECOND MOON.

2nd day.—This was then observed as the T'ah Ts'ing Tsieh (踏青節), or the festival on which the people left the city to tread on green grass in the country. Under the influence of Chang Kong Yün (張公詠) these scattered units were gathered together at the Wan Li K'iao (萬里橋) (now large south gate bridge) where a large number of boats were decorated and prepared for the guests to enter and be rowed around for a short time, the boatmen rowing to the music and singing of musicians. This outing was called Siao Iu Kiang (小游江) or a small outing on the river. At the Huan Hua K'i (浣花溪) there were more boats prepared, which did the same as at the south gate bridge, but on a more extended scale, which was called a large outing on the river. At both places large numbers of people congregated to watch the picturesque scene, and the gay crowd. At dusk a feast was held at the Pao Lieh-si (寶歷寺) where it is said that Chang Kong Yün composed the following poem.

1. In spring a thousand families come out to play.

Each face beams like a flower.

2. Like azaleas groups of three's and two's they stand,
In a whirl of passion they depart like riding a
cloud of smoke.

1. 春游千萬家 美人顏如花

2. 三三兩兩映花立 飄飄似欲乘烟霞

This Chang Kong ün (張公詠) was said to have had a heart like flint, but this ballad shows that he was not void of sentiment. In later years when Ts'ing Hsien Kong (清獻公) came into power, the number of these decorated boats was greatly increased, as a memorial to Chang Kong ün the writer of the above poem.

8th.—On this day the dealers in medicine held a feast at the T'ai-ts'i-si (太慈寺) in the morning, and at the Kin Shuen Yüen (金繩院) in the evening.

THIRD MOON.

1st day.—On this date the T'ai Sheo proceeded to the Hsioh Shae Shan (學射山) archery hill, which was situated outside the north gate of the city. After partaking of some refreshments he watched an archery tournament, which was celebrated in memory of Chang-peh-tsü (張伯子), because on this date Chang took leave of earth. The sorcerers exposed many charms for sale by the wayside, the people buying them freely to wear on their persons to ward off sickness and calamity, and also to protect the silk worms, being hatched on their persons, from evil. The people wore spring attire, and carried umbrellas, and traversed all over the hillside on holiday. In the evening a feast was spread at the Wan Sui Ch'i (萬歲池) or long life pool, where small boats were floating during the time of the feast.

9th.—The medicine shop keepers had a morning and evening feast similar to that held in the second moon.

21st.—On this date the T'ai Sheo left the city by the east gate and proceeded to a temple named the Chong Ch'uen Koh (衆春閣) situated on the Hai Yüen Shan (海雲山). After partaking of a meal he went to watch the people rubbing stones. The custom of rubbing stones at this particular spot is said to date from the reign of K'ai Yüen (開元) (A.D. 713). In the 23rd year of this reign a certain priest who was greatly beloved by the people died, and the people instituted this custom in memory of him. The people traversed the hillside then fished for stones in the small pond on the hillside, both male and female engaged in this search for stones. If any were found it was reckoned to be a lucky omen for obtaining a son in the course of that year. On this occasion the evening banquet was held at the T'ai T'si-si (太慈寺) temple.

27th.—On this date the silk market was opened at the Rui Sheng-fu-ren (睿聖夫人) temple, which was situated outside the large West gate. Some time previous to this, T'ien Kong (田公) had successfully besought and obtained

rain on this spot, therefore the silk worm market was moved there. The T'ai Sheo worshipped at this temple first, then feasted at the Tsin-chong-si (淨衆寺), and again in the evening at the Ta-chi-yuan (大智院). The day before Ts'ing-ming (清明) was known as the Han-shih-tsieh (寒食節), or cold food festival. On this festival the T'ai Sheo dined at the I chong yuen (移忠院) in the forenoon, and at the T'ai-ts'i-si in the evening. During the Sung Dynasty the orphan spirits were sacrificed to on this particular day at some point near the city.

The people who proceeded to sacrifice at the graves on the following Ts'ing-ming (清明) day were so numerous that they were likened to an army of ants on the move. In the reign of T'ien-hsi (天禧) (A.D. 1017), Chao-Kong-Chen 趙公稔 opened the Western pavillion, and allowed the people to visit it for recreation. So from that time onward down through the Yuan Dynasty this pavillion was opened annually at the cold food festival season. At these times there were booths erected for the sale of wine, tea, food and flowers. Music was to be heard on every hand. The T'ai Sheo received visitors. The festival lasted about ten days, and was reckoned to be the most important in the course of the whole year. In the Yuan Dynasty this festival lasted for one month. This extension of time was wholly due to the influence of the traders in wine, who made vast profits out of this festival.

FOURTH MOON.

19th day.—This date was observed as the birthday of the Huan Hua Yu Sheng-fu-ren (浣花佑聖夫人). On this date the T'ai Sheo left the city by the narrow bridge gate, and proceeded to the Fan An-si (梵安寺) where the ancestral hall of the above lady was situated. After sacrificing and dining the T'ai Sheo went on board a boat and reviewed the mounted archers shooting on the shore. His boat was afterwards towed to the Peh-hua-t'an (百花潭) where he viewed the beauties of the river scene. Here house and cargo boats were plying up and down; while ferry boats were seen crossing and re-crossing the river. This was the chief outing of the T'ai Sheo in the course of the whole year; when wine was served by him in great quantities to the visitors who resorted thither.

FIFTH MOON.

5th.—On this date, the T'ai Sheo dined at the T'ai-ts'i-si; where the doctors sold artimesia, and the sorcerers

prepared charms of red, or five-coloured cord. These charms were believed to be a protection against calamity, sickness or other evils, and also ensured long life to the wearers. The horn shaped dumplings called Ts'ong-tse (櫻子) were also on sale on this date.

SIXTH MOON.

On entering the first Fuh (伏), or first ten dog days, the minor officials went to meet the governor. On entering the second ten dog days, they went to meet the intendent of circuit. On entering the third ten dog days they went to meet the T'ai Sheo or prefect. At this season all official banquets were held in the Kiang-toh-miao (江濱廟). The idea was to make arrangements to avoid the intense heat of the season; for after breakfast they entered boats for the day, while the evening meal was served at the same temple. Large numbers of city people dined on the banks of the pond and remained as spectators for the remainder of the day.

SEVENTH MOON.

7th.—On the evening of the seventh day of this moon the T'ai-sheo dined at the T'ai ts'ī-sī. After supper he ascended to a loft from which he viewed the King-kiang-ie-shī (錦江夜市), when bean sprouts were sold for the girls' festival known as the K'ih-k'iao-tsieh (乞巧節).

18th.—On the evening of this day the priests launched small paper boats on the river in which were placed lighted candles. The lights were believed to lighten the orphan spirits to a place of refuge.

EIGHTH MOON.

15th.—On this evening crowds of people went out for a ramble to watch the moon in its mid-autumn beauty.

NINTH MOON.

9th.—On this date a large medicine fair was held. At this season the prefect lived in a tent for two days or more and often travelled around carrying his tent with him, in the hope that he might meet a celestial.

MID-WINTER.

The day prior to the Mid-winter, Solstice, the T'ai-Sheo spread a banquet at the Shih-yü K'iao (石魚橋). After the meal was over he proceeded to a wood to view the cutting of timber, which the timber merchants immediately despatched to the city.

CHAPTER V.

THE ANCIENT KINGS OF SHUH.

The Chinese have attempted to trace the history of Shuh back to the time of the Emperor Ren Huang (人皇) (3000 B.C.) or earlier. They state that the ancient rulers of Shuh (蜀) were styled Shuh Shan Shī (蜀山氏), whose family name was K'ai Hu T'ao (愷胡洮) and his style Wen Seng (文生). The ancestral father was Seng Tsi T'sang (辰祭從), and the ancestral mother was the Teo Mu (斗姥) or Bushel Mother who belonged to the tribe of Mo Li (摩利). The Bushel Mother rode in a chariot of the spirit of earth, and first began to reign at Sie Koh (斜谷); which is now included in the prefecture of Han Chong (漢中府). Legendary writings also say that the Son of Huang Ti (黃帝), whose name was Ch'ang I (昌意) married the daughter of the Shuh Shen Shī whose name was Ch'ang P'uh (昌僕). This woman became the maternal pivot, and bore the Chuan Süh Kao Yang Shi (顓頊高陽氏), whose progeny governed Shuh for many generations, and down through to the Cheo period. When Cheo Wu Wang (1122 B.C.) mustered his troops at Muh Ie (牧野), there were soldiers from the Rung (庸), Shuh (蜀), Ch'iang (羌) and Mao (髦) tribes to support him.

In the first year of the reign of Tong Cheo Siang Wang (東周襄王), (651 B.C.) the Shuh Prince Ts'an Ts'ong (蠶叢), became King of Shuh. After his decease his son Peh Kwan (柏灌), also called Peh Wu (拍護), succeeded him in his dominions. On the decease of Peh Kwan (柏灌) his brother Yü Fu (魚臚) succeeded to the throne. It is stated that Yü Fu had a very peculiar visage, and a head resembling a tea pot.

His popular name was Tu Yü (杜宇), and his Capital was located in P'i Hsien (郫縣). He exerted himself and established his kingdom on all sides. He was fond of irrigation and did much to improve the prospects of his kingdom in this respect. It is specially stated that he did

much to improve the district of P'u Kiang (蒲江) by his skill in controlling and guiding the floods. There are still ferries at P'eng Hsien (彭縣) and Ts'ien Wei (犍爲) which bear his name, thus giving some idea of the wide influence he exerted.

At that period all the native princes styled themselves Wang (王) but Yü Fu (魚臯) only styled himself expectant King.

Whenever floods came and got out of his control he at once began to think of abdication in favour of a more competent person.

About this time a certain man named Pih Ling (鼈靈) came to Shuh from Kin Cheo (荊州) in Hupeh. He opened the Yü Lui (玉壘關) gorge, which is situated near what was then called Mien Ch'i Hsien (綿虢縣) below the present city of Wen Ch'uan (汶川). When Yü Fu (魚臯) saw the work accomplished by Pih Ling (鼈靈) and heard of his wonderful powers over the surging floods, he abdicated in his favour and retired to Feng Tsieh Hsien (奉節縣) situated in the Kingdom of Pa (巴); where his descendents were known as Yü Fu P'u (魚復浦). Thus the ancient line of Kings left Shuh (蜀) and were succeeded by the descendents of Pih Ling (鼈靈). It is popularly believed that Yü Fu (魚臯) left Shuh in the spring season when the T'ien Chü'en (田鵲) or goatsucker, was at the height of its spring crying. It is believed that this bird is calling the farmer in the very early morning to hurry up to work by calling K'uai K'uai Huang (快快黃), "I ripen quickly." This refers to the wheat and barley which make up the spring crop. From this time onward the goatsucker was called the Tu Chüen (杜鵑) and P'i Hsien (郫縣) his former capital the city of the Tu Chüen (杜鵑) a poetical name which marks the city down to the present day.

It is said that when Pih Ling (鼈靈) ascended the throne of Shuh that he took the title of K'ai Ming Shi (開明氏) with the Dynastic title of Ts'ong Ti (叢帝), and his line of Kings continued to govern the country for nine generations, his capital was later set up in Ch'en tu. It is said that a temple to the memory of Pih Ling still exists near Liang Lu K'eo, some 17 li from P'i Hsien.

About the close of the Cheo Dynasty, and in the 5th year of the reign of Emperor Chen Ts'ing (愼靚) (320 B.C.), the Kings of Shuh and Pa went to war with each other. Later the Ts'in (秦) Emperor Ts'in Huei Wang (秦惠王) sent two of his Generals, Chang Ni (張儀) and S'i Ma Ts'o (司馬錯), to subdue the country of Shuh and bring it into

subjection to the Ts'in Dynasty. This they succeeded in doing by receiving the help of the Kingdom of Pa; but no sooner had the generals succeeded in reducing Shuh to subjection than they turned on and also subdued the Chü Pa (苴巴). Thus from this time onward Shuh lost its independence and became a tributary kingdom. The period thus covered by ancient Shuh Kings is as follows. From Cheo Huei Wang, (676 B.C.), to Chin Ts'ing Wang, (320 B.C.), is a period of about 356 years. The period from (676 B.C.) to (468 B.C.) was the period in which the Ts'an Ts'ong (蠶叢) line of kings reigned. The period dating from 468 B.C. to 320 B.C. was the period in which Pih Ling (鼈靈) and his line of kings governed the country, and were the last real Shuh Kings. It has been claimed that King Yü Fu (魚臈) was the lineal descendent of Shen Long (神農) and the ancestor of Li Ping (李冰) of irrigation fame. These conclusions are arrived at by a system of genealogical acrobatic feats which it is almost impossible to follow in detail.

It is said, however, that Li Ping (李冰) was a native of Pa Tong, which was probably at that time part of the Kingdom of Pa (巴) to which Yü Fu (魚臈) and his family retired on abdicating the throne of Shuh in favour of Pih Ling (鼈靈). So it is not improbable that Li Ping was of the same race as Yü Fu, and of ancient kingly stock, and one who had an ancestry both fond of, and expert in, the art of irrigation.

The Yangtsi gorges are spoken of as the Ts'an Ts'ong Wan Ren (蠶叢萬仞), or the ten thousand measure of Ts'an Ts'ong. As to what this actually refers to remains to be proved, but the more credible among the people declare that the marks of the pickaxe can still be traced in some places in the gorges. Thus making a clear inference that this great Yang tsi funnel was the work of the descendents of Ts'an Ts'ong (蠶叢).²

The Yangtse boatmen declare that the gorges were opened in the reign of Ts'in Shih Huang (秦始皇). So it is quite possible that great strides were made along that line about that time.

² It has been explained to the writer that the suspended coffin in the Kwan Ts'ai gorge, and the coffin ends which give the wind box gorge its name, were coffins which contained the bodies of officials who died during the excavation period and were buried in the crevices of the rocks.

NOTES ON NAMES OF NON-CHINESE TRIBES IN WESTERN SZECHCWAN.

J. HUSTON EDGAR, F.R.G.S., F.R.A.I.

Weichow or Sin-pao-kuan is, perhaps, the most ancient centre on the Szechwan Frontier. To the south is the traditional birthplace of the great Yü, and to the north is Mou Chow 茂州³ an ancient centre, from which exploring parties of the Han sought to find a direct route to Graeco-Bactria 大夏 which had been lately conquered by the Yüeh Chī 月氏. In the struggles which ensued from the earliest times we constantly find the names Ti 氏, Ch'iang 羌, Yong 戎, T'u Fan 吐蕃, Yi 夷, and Man 蠻. It is unlikely that the writer can throw any new light on the ancient hordes of China, but the opinions of the native historians may be of some interest to many.

(1) *Ti* or *Chī* 氏.—The Ti are mentioned in the Shī Chi 史記 with the Tsoh 筰 and frequently with the Chiang. Kang Hsi after quoting from the Odes 自彼氏羌莫敢不來享 莫敢不來王 gives the location of the Ti-Chiang. We are also told that the "White Horse" tribe was the most powerful of the ten odd Ti-Ch'iang Divisions. Mention is also made of the "Blue" and "White" Ti 青氏, 白氏.

In the Wen Ch'eng Tze Hwei 文成字彙 we are told "Ti" was a name for the Western Yi 西夷 and the Ti-Ch'iang 氏羌 were dispersed in the west of the Kwang Han 廣漢 region. In the "New Dictionary" "Ti" is given as the "Ti-Ch'iang" and a horde of the "Hsi Yong" 西戎; and in the T'ze Yüen 辭源 the same people are given as "the Hsi Yong" 西戎. Turning now to the Histories of Wen Ch'uan, Lifan, and "Mao Chow" 汶川, 理番, 茂州 we find mention made of a "Ti Kueh." It is said that "The mountain containing the grave of the God of Agriculture, Heo Chi 后稷¹ is surrounded by water in Ti Kueh" 按氏國今威, 茂, 疊溪地; and a note explains that the Ti Kueh has been proved to be the regions of Tieh Chi, Mao Chow, and Wei Chow. Then we have the fact stated that the territory Ran Pang 冉駹 (漢時自筰以北冉駹最大) was composed of "Chiang and Ti" 羌氏; and also in the Ch'ien Ti Territory 湍氏 (a later name for the same region) was to be found "the Six Yi, Seven

³MOU 茂 (四川 MENG CHOW) is pronounced MAOCHOW.

Ch'iang, and Nine Ti'' 七羌, 六夷, 九氐. Moreover, we hear how in the days of Han the Ti rebelled and were, as usual "slaughtered and pacified." Later a barrier near Mao Chow was the door of the Chiang and Ti who, even about A.D. 250 were not bereft of power. But returning again to the Ti Chiang (cf. Anglo-Saxon) we find the people of Lifan who are descendants of this horde, inherit from them their present uncouth and stupid dispositions. Mao Chow, from the Tang and Song times, was again and again annoyed by the unconciliatory tactics of the T'ufan 吐蕃 and Ti Ch'iang. This name during the Cheo 周 Dynasty seems to have been changed to Shuh Chiang; but from the very early times, when the Luan Bird 鸛鳥 was seen in Ti-Ch'iang, to the days of the Tang and the Song, a people known as the Ti-Ch'iang played an important part in Chinese politics. In Klaproth's Ethnographical Tables—from earliest times to A.D. 1000—we are told the "Ti" are the same people as the Ch'iang. The translator makes the Yüeh Chī, also, a cognate race. However, as he confuses the Shī and Ti 氏 and 氐 we may suspect an error. But if not, and admitting the correctness of his classification, we shall be forced to connect our Ti Ch'iang with one of the most picturesque of non-Chinese peoples—the Yüeh Chī, who are, probably, also the same as the Uigurs.⁴ But even more interesting is Schnyler's suggestion that the Yüeh Chī are the old Getae or Goths. If this is so we should then be inclined to insist on Ti (氐) not 氏 as the correct reading. It is quite possible that the old Ti⁵ stock may still be found in the hills around Wei Chow and Lifan. In any case the people on the left bank of the Lifan river are known as "Ti or Tae mi"—the Ti or Tae people.

(2) 羌.—The Ch'iang are well-known to readers of Chinese History. The Chinese look upon them as a branch of the San Miao 三苗. Further, we are told "Ch'iang" is a name for the Western Yi; "they are a tribe of the Hsi Yong 西戎, and that even now in Kiai Chow 階州 and Mao Chow 茂州 there are Ch'iang people." In the Shi Chi 史記 the Ch'iang are mentioned as blocking the way to Ta Hsia 大夏 (Graeco-Bactria) and south of a line from Lob Nor to the Great Wall was Ch'iang country closed to China; and Chang Chien 張騫 would not risk crossing the territory of these "wander-

⁴The name of the Ch'iang ancestor was 羌無戈爰劍. The 戈 is also represented by 戈 and Wuko=slave.

⁵Later they were known as the 居於仇. The name 九子 by which the territory of certain "羌" is known may be related to the 居於仇. This is the division known to the Gyakung as Ti or Tae mi.

ing shepherds"; nor would he recommend envoys to and from Bactria passing through the country. In one place, at least, he speaks of them as a people united with the Ti (Ti Ch'iang). In the official account of Tibet (Hsi Tsang Tu Kao) 西藏圖考 Tibet is spoken of as the land of all the Chiang and Yong; and again that the "Hsi Yong" of the "Yü Kong" Classic 禹貢 are "the Chiang Hordes of Songp'an, Mao Cheo, Wei Chow, Lifan, and the two regions comprising Tibet 衛藏. Then follows an account how Ch'iang fugitives (Uigurs?) spread into Tibet; multiplied rapidly; and set up a kingdom amidst the earlier Ch'iang hordes. It is difficult to find the true value of the term Ch'iang. Under "Four Yi 四夷" in Doolittle's "Numerical Phrases," the Barbarians or "Yi" of the West 西夷 are known as Ch'iang 羌, Fan 番, or Yong 戎; and in the "Wen Ch'eng" they are called "the Western Yi . . . who are shepherds." Klaproth makes "Tibetan Nations" and "Ch'iang" synonymous terms. But the "Hsi Ch'iang" are fugitives from 湖南 Hunan. Are the Ti Ch'iang and the Shuh Ch'iang then the same people as the Hsi Ch'iang? Or were they from one parent stock modified differently by alien influences during widely separated migrations in time and regions? A scientific study of frontier phonetics may throw some light on this question. The Ch'iang seem to be the great fugitives of Chinese History and we often find them split up into divisions which, if they had been united, would have given China an uneasy time. They were, and are, animists, and their white stone worship may suggest a desert people who depended on the moisture of snow peaks to fertilise their oases. A region like Eastern Turkestan or North Western Kansu, is immediately implied. Their exorcists, in some regions, worship the monkey which may be connected with the belief of Tibetans, and some early Ch'iang tribes, of their descent from this animal.

(3) *The Yong 戎*.—The "New Dictionary" says "Yong" is a general name for all the Western Tribes; and the "T'u K'ao" defines the Hsi Yong 西戎 as the Tibetan and Frontier "Chiang." "Yong" seems to be an ancient term and has probably lost its original meaning in the West of Szechwan. But it may be (judging from my slight study of Frontier phonetics), suspected in "Hsiung (Nu); the "Hsi Yong" could be the same word where the "s" would be retained. In the west of Szechwan is a very numerous people, Lamaists, who are known as "Gya Rung⁶" by the Tibetans, and

⁶Gyanag (Chiana) the Tibetan word for China.

Ke Rũ by themselves. The former word means simply "Chinese Rung⁷," and they are no doubt a remnant of tribes included in the term Hsi Yong. In the 1895 Journal of the Royal Asiatic Society (N.C.B.) page 53, a writer assumes a Sakae origin for the Szechewan civilisation (巴屬 Paçch-Sakae. But this claim is doubtful. However, some of the Yong or Rung customs, such as their method of milking cows, is identical with a Scythian custom mentioned by Herodotus. It will not bear printing, but curious readers may find it in the History of the old writer mentioned. The Gya Rung remain to-day one of the most virile, numerous, and interesting elements in Frontier ethnology. They may number a million souls, and probably include the Golo robbers. They are almost all Lamists, and in a general way are moulded by the Lhasa civilisation.

(4) The T'u Fan⁸ "are the western part of the Ch'iang"; or "the Tang Dynasty Tibetans." The Tibetans to-day call themselves "Bö" the old pronunciation of Fan, and no doubt T'ufan (T'u Bö) is the origin of our word Tibet. The term was originally a Dynastic Title adopted by a Ch'iang people in Central Tibet. The "T'ukao" says the Tufan originally sprang from the Hsi Chiang of whom there were 150 tribes. This idea was so fixed in the minds of Chinese authors that we find in Klaproth the amalgamation of the Suen po 孫波, a Hsi Ch'iang race, with the T'ufan described as a "re-union." At one time T'ufan was a powerful kingdom and it may be of interest to give in full the three main theories as to its origin: (a) "In the Ch'in 秦 Dynasty there was a Chiang slave named Yüen Chien who escaped to his home. In the days of his great-grandson Ren, the soldiers of Ch'in were beginning to exterminate the Tih, Yüen, and Yong. Chiung, the uncle (of Ren) fearing the wrath of the Emperor, fled with his kindred and followers several thousand li to the west of the Ts'ï Ch'ï River where his descendants became the founders of 150 tribes including Fah Chiang T'ang Mao and others too numerous to record. The founder of the T'ufan Dynasty . . . was descended from the 'Fah Chiang.' He lived to the west of the Ts'ï Ch'ï River and took T'uh Fah 禿髮 as a Dynastic Title (Tuh Fah mispronounced became Tufan 吐蕃) and by degrees united the Chiang hordes. His kingdom in time became enormous, but he had no relations with China."

⁷But the present meaning may be an adaptation of an older word like "Chiang": Gya + Yong, or Chi (氏) + Yong (戎).

⁸番西戎之種即唐之吐蕃. Hence 番=蕃.

(b) The second from the "Wei Chow Annals" gives some additional details. "The Fah Chiang and T'ang Mao lived to the west of the Shae Chī River, and were the descendants of Liliku, a T'uh-fah of the Kan Liang 南涼禿髮利鹿孤⁹. Liliku had a son named Fan Ni 樊尼. When Liliku died his son was still young, and the child's uncle became ruler with Fan Ni as general of An Hsi. About A.D. 414 Ru T'an 俎檀, his uncle, was killed by Chī P'an, a Ch'i Fuh (乞佛熾盤)¹⁰ of Eastern Chin. Thereupon, Fan Ni gathered his people together and submitted to Meng Hsüin (of 沮渠)¹¹ and became Governor of Lin Song. But when Meng Hsüin was murdered Fan Ni fled west with his people over the Yellow River and crossing the Chih Shī range dwelt in the Brahmaputra valley, and there in the midst of the Chiang, setting up a kingdom, controlled a thousand li of territory. Fan Ni, by his dignity and mercy, drew the Chiang hordes to him like crowds to a market. He changed his name . . . and took T'uh Fah as a Dynastic Title. This name through a mispronunciation became T'ufan. The capital of the kingdom was Lo Hsie 邏些 Lhasa."

(c) The next is of Mongol origin and quoted in the "T'u K'ao." "The Mongols are a branch of the Tibetans, and they in turn are Hindus (額納持珂克). One, Yanah (雅納), a prince of Oude 烏迪, on being defeated by his neighbours, fled across the Snow Ranges and became a person of importance in the Brahmaputra valley. His third son being a man of extraordinary worth became, by popular choice, the ruler of 880,000 Tibetans." He was eventually succeeded by twenty, one princes, apparently directly or indirectly related to him and when the Long Tsan, of Tang Dynasty fame, "was sixteen he became ruler" and began putting the Government in order and apportioning the most suitable punishments. It was he "who married daughters of the Nepaulese Royal family and an Imperial Princess of China" respectively, in the early decades of the Seventh Century. From about A.D. 650 to 1068 the T'ufan ran riot around their borders, and not only kept the western frontiers in a perpetual ferment, but also extended their conquests to the Tarim valley, and the Historic lands from Lob Nor to the Kansu Border. And on one occasion they even took the Imperial City of Ch'ang An. Between A.D. 700—1000 they

⁹禿髮 T'uh Fah or 烏孤 (Wu Ku) Hordes of 鮮卑.

¹⁰乞佛 was a Branch of the 鮮卑 living in Shensi.

¹¹沮渠 was a Hsiung Nu Tribe 匈奴.

were intermittently in possession of the Min valley, and according to Du Halde, the T'ufan Kings had an Eastern palace in Wei Chow. The term 西番, which may be an adaptation of 蘇毗, is now applied to the Tibetans of Sung p'an, and Grenard says, to the Golo also. The name Lifan 理番 requires no comment except that its "Fan" contains the ancient 生番—is this a corruption of 孫波? (Po=Fan) as well as Yong and "Chiang" if not "Ti" and "Yi." But the character is 番, not 蕃,¹² and may have no ethnological connection whatever; but all the same in earlier days History affirms that the sounds "Fah" and "Fan" were so nearly similar that they become indistinguishable and "Fah Chiang" became "Fan Chiang"; and the Tibetans or "T'ufan" are descendants of the ancient "Fah" or "Fan" Chiang. Moreover, if the old sound is "Bo" we find the modern Tibetans still calling themselves by their Tang Dynasty name.

(5) Yi 夷 seems to be a general name for non-Chinese people. Even now Lolos, Yong, Ch'iang and Europeans are called Yi by the Chinese. But in ancient times the Ch'iang and Ti are separated from the Yi, and on more than one occasion we are told that there were "six Yi, seven Ch'iang and nine Ti" in the mountains of the min 岷江 valley. And even to-day, not far from Wei Chow, are an ancient people with customs and speech similar to the Mao Chow Ch'iang, who call themselves "Er Mi" or "Ae Mi." As this is a manifest corruption of "Yi," time may prove them to be a remnant of the Han Dynasty division of that name. In any case, the meaning is, ethnologically, probably quite distinct from the same term in "Fu Yi Fu" 撫夷府, the title of the officials in Lifan 理番 and Opien T'ing—a Lolo Centre—during the time of the Manchus.

(6) 蠻 The term "Man" is also applied to the non-Chinese in Szechwan. A quotation from the "T'u K'ao" may be of interest. "In the Nine Divisions of Yü 禹, Liang 梁 was not included; and in the 15 Odes there is no recognition of Shuh. At first, Shuh was known as the Kingdom of the South, and later became united with Chin. But geographically Szechwan was the most dangerous of the States. On three sides it was touched by the 'Fan' 番, and 'the nest- and tower-dwelling Man 蠻,' of the Devil Kingdom (鬼國 = Kuei Chow) gave them anxiety. The people were fierce

¹² When it is remembered how the Tang suffered at the hands of the 吐蕃 hordes and the alliances formed, the term 蕃 would naturally be replaced by the less objectionable one.

and stupid: they were always armed with knives and were villianous looking. They were utterly incapable of progress." " . . . In the South East were the Ch'iang and Lo 羌獯." In the South West "were the Cave-dwelling Man 洞蠻" and in the North West the "Tufan" 土藩 of Kin Chuan 金川 Wei 威 Meng 茂 Pao Hsien 保 and Sungpan 松潘. In the time of Chu Koh Wu Heo, the good minister of the Shuh Han, "the Ch'iang and Ti still retained power." The term "Man" at one time meant the uncultured non-Chinese of the South, and in the Yüen Dynasty included large sections of the population South of the Yangtze. But now it is especially applied to the Tibetan tribes in Tachienlu. The term here, however, may be a Chinese adaptation of a native word like "Minya,"¹³ the Tibetan name for Tachienlu country. This centre is comparatively recent as regards Chinese influence, and the Tibetans, while disliking the term Mantze, 蠻子, have no objection to Man Chia. But the term is applied to the non-Chinese of many regions. For instance:

We are told in the "T'u Kao," that "all around Sungpan are 'Man'" that "the gardens of the 'Man' and Liao 獠 encircle the Hills in the Min"; and the Wen Chwan Man 汶川蠻 "come in battle array." Then we have "all the 'Man' of Pao Hsien (Lifan); bebies of Mantze maids at Wei Chow"; and the many "Man" within the Szechwan Borders, and apart from the reference of "Cave Man" 洞蠻, the Caves around Kiating and other places are persistently described as "Man Tong" by the ordinary people.

These notes will do little but suggest difficulties. Some of the names are manifestly only geographical designations and include peoples politically and ethnologically different. Then during the ages it seems as if many of these names become opprobrious titles (by change of character and sound) for non-Chinese tribes without regard to the old geographical limits. Again; the use of uncomplimentary epithets seems to change with the age and dynasty. We have seen that terms like Yong 戎, Yi 夷, and Man 蠻 give no certain sound; and Ch'iang may not be much more satisfactory. Are they a pure stock?¹⁴ Apart from the old association of the seven

¹³ Minya.

¹⁴ One of the above accounts from the "T'u Kao" makes the Tibetans pure Chiang; the second seems to make the Hsienpi T'uhfah also Chiang, and the Tibetans an amalgamation with an earlier Chuang stock in Tibet. And even if the third is correct, the Tibetans will be mainly Chiang.

The White Stone referred to under (1) is of untrimmed quartz and may be conical, triangular, or cylindrical in shape. They are seen on commanding hills, houses, graves, altars and in rude temples and even on lamaseries. Known as the God of the Mountains (山王菩薩), and The God of Heaven (天菩薩) they suggest the litholatry of Semitic paganism. These stones, like the "bethels" of the ancient Syrians seem to be regarded as the matter in which the Deity is embodied. (οἱ λίθοι εἰσὶν ξηψυκοί ...). Litholatry and other forms of Sinitic paganism travelled far by land and sea; and we find the idea that stones were animated perpetuated in Manicheism. For further information consult CUMONT'S "Oriental Religions," page 116, and also Note 29, page 244.

FIR-FLOWER TABLETS.

J. C. FERGUSON

Mrs. Dargan has written in a recent poem:—

Let us go on with experiments
Let us pore, and dream and do;
Some day we may make a world
With a buttercup in it
Or a swallow's wing.

Miss Lowell has made the great experiment: She has pored and dreamed and done; out of the great number of Chinese poetical effusions she has made a world for English readers in which there are buttercups and a swallow's wing.

Miss Lowell's approach to Chinese poetry, as explained in her Preface, was four-fold. She had the Chinese text before her with the sounds transliterated so that she could follow the original metre and rhythm; the text was translated word by word; the Chinese ideographs were analysed as to form so that their derivation might contribute a share to their meaning; and lastly the meaning of the text was paraphrased for her by her friend Mrs. Ayscough with the aid of her Chinese teacher, Mr. Nung Chu. This method, though laborious, was sound. It was much more difficult than that pursued by the English translators of Homer or Virgil who could poetize directly from an original text and to whom classical allusions and references were familiar. The task was even greater than that which Shelley set for himself in his version of "Prometheus Unbound" for Shelley did not feel himself obliged to bring his drama to the same conclusion as Aeschylus lest such a denouement should shock his own sense of justice. Miss Lowell has been content with the standards of the original Chinese versions, and with setting these forth as accurately as possible.

Miss Lowell followed a different method in "A Legend of Porcelain" published early in 1921 in the volume "Legends." She says that this poem was composed of three legends which she read in some books that she cannot

remember though she mentions Bushell's "Chinese Pottery and Porcelain" and Julien's "Historie et Fabrication de la Porcelaine Chinoise." She quotes a Chinese proverb as her excuse for not mentioning the names of many other books on China which she has read. The difference between "A Legend of Porcelain" and the poems in this volume is that the Legend is a fancy sketch of China while these are China itself. It is the difference between a travelogue and a trip to China. The "Legend of Porcelain" evidences an exactness in reading and a generosity in interpretation which can only be characterized as remarkable but the viewpoint is detached. In the "Fir-Flower Tablets" it is intimate. It may be noted in passing that the "Legend" is responsible in all probability also for the happy name of this volume, "Fir-Flower Tablets," for it is found on page 42 of the earlier work.

It is nothing new for Miss Lowell to get her inspiration in out-of-the-way places. She has drawn confessions from the yuccas of Peru and heard the funeral song for the Indian Chief Blackbird with the same enthusiasm as she has shown in her studies of six French contemporary poets. Every tale that she has read has become grist to her mill. One can imagine the ready eagerness with which she welcomed the beauty of the thoughts contained in the translations of "Written Pictures" brought to her by her life-long friend Mrs. Ayscough and her immediate recognition of the possibility of their being turned to good poetical account.

There has been no attempt to follow the metre or the rhythm of the originals. Miss Lowell explains that she considers it more important to reproduce the perfume of a poem than its natural form. How could she or anyone else have followed the metre and rhythm of Fêng Huang T'ai (p. 21):—

Feng huang t'ai shang fêng huang yu
Fêng chü t'ai k'ung Chiang tzü liu

There are seven words only in each line and the rhythmic vowel sound is *iu*. Her poetical inspiration interpreted the meaning of these two lines:—

"The silver-crested love-pheasants strutted upon the Pheasant Terrace.

Now the pheasants are gone, the terrace is empty and the river flows on in its own original way."

The result of the interpretation is English poetry in a sound conception of it as "the art which has for its object the

exciting of intellectual pleasure by means of vivid, imaginative, passionate and inspiring language"; but at the same time one who has been familiar with the beautiful rhythmic flow and striking imagery of the original Chinese receives a distinct shock from which it takes some effort to recover. Recovery is only complete when one remembers how few are those of our English-speaking race who have ever had the opportunity of feeling the thrill of emotion produced by these lines in the form in which they were written by Li T'ai-po.

It must be predicated again that there is real poetry in the Chinese language—poetry that will endure the severest tests ever set up by Western critics, just as the world has come to realize that there is real art in Chinese sculpture and painting. Mr. Daniel French once said to me after we had spent half a day together looking over Chinese paintings: "This is not Chinese art; this is art." The references in Chinese poetry or art may be to alien places and unknown events but the appeal is equally effective in "the exciting of intellectual pleasure." One may know nothing of the Heaped Jade Mountain or the Green Jasper Terrace, but one's imaginative instincts are aroused by such musical names especially when they are in close conjunction with a beautiful line:—

"Flowers make me think of her face." (p. 16.)

There is true poetry—English poetry, in "the music of silence" (p. 103) but no truer than Tu Fu's original, *hsü lai*, which suggests the harmonious tranquility of a soul at peace with itself.

John Barrow wrote in his "Travels in China" more than a century ago that the Chinese language "is much better adapted to the concise style of ethics than the sublime flights of poetry" and remarked upon the absence of the passion of love "to which poetry owes some of its greatest charms." He gave a literal translation of the T'ao Yao Ode in the *Shih King* (Legge, Part 1, Bk. 1, Ode VLI) as follows:—

¹ "The peach-tree, how ² fair, how ³ graceful, its ⁴ leaves, how
⁶ blooming, how ⁷ pleasant; ⁸ such is a ⁹ bride, when ¹⁰ she ¹¹ enters her
¹² bridegroom's house, and attends to her own family."

Barrow explains that this is a fair translation, "since no more expletives are inserted than such as were necessary

to make up the sense." He appends a metrical paraphrase by Sir William Jones:—

Gay child of spring, the garden's queen
Yon peach tree charms the roving flight;
Its fragrant leaves how richly green!
Its blossoms, how divinely bright!

So softy smiles the blooming bride
By love and conscious virtue led,
O'er her new mansion to preside,
And placid joys around her spread.

The translation and the paraphrase both lead one to wonder how their sentiments can be reconciled with the alleged absence of "the passion of love." The criticism would have been still stranger to this early author if he had fully realized the poetic inspiration of the original in associating the spring months when the peach tree is in flower with the correct marriage time of youthful lovers. Mr. Waley in his introduction to "170 Chinese Poems" remarks with a greater knowledge of his subject than was possible to Barrow, that love poetry "ceases after the Han dynasty," thus making clear that it still remains for some poet to revel in this field of poetry before the Han period. It may also be remarked that the ancient poetry of China is full of the stirring inspiration of war.

The apparent inadaptability of the Chinese language for poetical composition has been more apparent than real and has been no deterrent to the succeeding generations of Westerners interested in Chinese literature. Sir John Davis made a careful study of Chinese poetry and made verses out of his translations one of which at least reveals rich beauty which he has extracted from the original:—

"Five mountain peaks, like so many fingers, rich tints blending
Rising out of the plain like pillars half concealing the sky,—
By night, washing in the milky way, they pluck at the stars;
By day, exploring the zenith, they play with the clouds.
After a shower, like jewelled sprouts of bamboo, they stand in
mid-air;
When the moon rises, they resemble pearls suspended in the palm
of the hand,
One might imagine it was a mighty spirit stretching forth its arm.
And numbering China's islands in the distant main."

George Carter Stent ventured out of his domain of dictionary-making into the fields of poetry and gave a metrical version of the "Adventures of Tiny Rill,"

"Over green fields and meadows on "Tiny Rill" ran.
(The little precocious coquette);—
She was pretty she knew, and thus early began
Gaily flirting with all that she met.

Her favors on both sides she'd gracefully shower,
 Regardless to whom they might be—
 One moment she'd kiss the sweet lips of a flower
 The next—lave the root of a tree.

She would leap from one rock to another in play,
 Tumble down on her pebbly bed;
 Like a Naiad, let the dazzling sun-smitten spray
 Fall, in prismatic gems, round her head.

Sometimes she would lash herself into rage.
 And rush roaring and seething along,
 Till a bit of smooth ground would her anger assuage
 When she'd liquidly murmur a song."

Even the staid Alexander Wylie frequently made his translation of the verses of stone tablets assume metrical form and at least once he attempted rhythm, in his essay on "Secret Societies,"

"When Hung with Hung in harmony combines,
 The watchword "Myriad" passes through the lines."

In a later generation of sinologues Kingsmill, Parker and Giles all were moved to adopt poetical form in their transmutations of Chinese verse. Mr. Kingsmill was "convinced of the true poetry contained in the Shih King ballads" and "ventured to submit them in their own simple garb to the æsthetic ear of the foreign critic." His rendering of the first Ode is:—

As the ospreys woo
 On the river ait
 So the graceful lass
 Has her manly mate.

As the coy marsh-flowers
 Here and there do peep,
 So the graceful lass
 In his wakeful sleep.

But he seeks in vain
 Brooding night and day
 Ah me! Ah me!
 Tossing rest away.

As the coy marsh-flower
 Chosen here and there
 So the graceful lass;
 He in tune with her.

As the coy marsh-flower
 Gathered here and there
 So the graceful lass
 Bells now ring for her.

Mr. E. H. Parker also tried his hand:—

When the white sun, heigh-ho!
 That line doth pass
 I will come seek you, Sir,
 In this thick grass.
 Sunk is the sun, heigh-ho!
 Disheartening, very
 The moon is up, ho there!
 Haste to the ferry!
 Delay like this, heigh-ho!
 Reverse of merry!
 Ho! you in the grass, I say!
 Ho! you in the grass, I say!
 Are you not then some luckless runaway.

The stirrings of heart of these two worthy sinologues are perfectly apparent as is also the horrible quality of their doggerel:—

I've measured it from side to side
 T'is three feet long and two feet wide.

Giles introduced a new light touch and with his usual brilliance improved upon the work of his contemporaries and predecessors as may be readily seen in his "Chinese Poetry in English Verse," (1896). Mr. Waley rightly says of this work that in it Mr. Giles "combines rhymes and literalness with wonderful dexterity." In his "Chinese Literature" Mr. Giles says that "a Chinese poem at best is a hard nut to crack" but this knowledge did not cause him to stay his hand; and it is well that it did not for his translations have done more than anything else to stir up interest in Chinese poetry. This result causes no wonder for some of Giles' work was of a high order, such as his translation from T'ao Ch'ien:—

A scholar lives on yonder hill
 His clothes are rarely whole to view
 Nine times a month he eats his fill
 Once in ten years his hat is new.
 A wretched lot—and yet the while
 He ever wears a sunny smile.

Longing to know what like was he
 At dawn my steps a path enclosed
 Where dark firs left the passage free
 And on the eaves the white clouds dozed.

But he, a spying my intent,
 Seized his guitar and swept the strings;
 Up flew a crane towards heaven bent
 And now a startled pheasant springs.
 Oh, let me rest with thee until
 The winter winds again blow chill.

Mr. Giles used both metre and rhythm in his translations but only as media for transfusing the warm blood of the original into his own lines. The charm of his work and the permanency of its value lie in his imaginative conception of the beauty of Chinese verse which remained in concealment from English readers. In other fields Giles has not always shown himself sympathetic with the spirit of his original sources, but in poetry he has shown such a response to the Chinese emotional appeal that it is possible he might have become that fortunate combination whose lack Miss Lowell laments in her Preface. "A sinologue has no time to write poetry; a poet has no time to learn how to read Chinese." We venture the surmise, however, that without Giles' preliminary work, the world would not now be the happy possessor of "Fir-Flower Tablets."

It was fortunate for both that Miss Lowell and Mrs. Ayscough collaborated in producing this volume, and I find it impossible anywhere between the two covers to apportion the share which each had in the final form. Mrs. Ayscough must have had poetic instinct of a high order, and surely Miss Lowell has keen powers of discrimination in the choice of correct English words to convey Chinese ideas. In Miss Lowell's Preface Mrs. Ayscough's hand appears just as in Mrs. Ayscough's Introduction Miss Lowell's broad scholarship, especially in French literature, is in evidence. In the poems themselves the separation into component parts of the joint work of the authors is still more impossible. Together they stand or fall; and certainly they stand.

Everywhere there are evidences of intimate collaboration. In the second stanza of the first poem "Songs of the Marches" Mrs. Ayscough must have been responsible for the line "swift as the three dogs' wind" in which the triplicate use of the dog radical in the character p'ao suggested the striking imagery of wind which resembles the convulsive panting of heated dogs. She must also have suggested the onomatopoeic lines, "Hsiao, hsiao the horse neighs" and "Sheng! sheng! it drips, cutting my heart in two"—which remind one of Legge's line "Lin, lin go the hounds" (She King Part I, VIII). It is also more than probable that the drab translation of i shang as garments or clothes was changed in the Peony Song (p. 16) and again in the Feng Hsien Temple Visit (p. 103) to the more vivid picture of "upper garments, lower garments" which is fully justified by the essential meaning of these two characters. Mrs. Ayscough doubtless favored the unusual phrase "green heavens" (p. 6) as an equally accurate description of the

color of the heavens as our conventional description "blue." The character "ch'ing" according to the author of T'ao Lu, translated by Bushell, means a color "approaching a light blue, or a pale emerald or a deep green or bluish green." The authors' translation as green, calls attention to the Chinese conception of the color of the heavens as broader than our own, though as a matter of fact neither blue nor green suffice to describe fully their ever-changing effects. Mrs. Ayscough was no happier in the choice of Miss Lowell as her poet than Miss Lowell in selecting Mrs. Ayscough as her interpreter of Chinese poetical ideas. Both appreciated the beauty of the originals and vied with each other in reproducing it in the English language.

With so many good verses to select from it seems wellnigh invidious to pick out any as better than others, but it may not be amiss to express one's satisfaction that the authors chose "The Songs of the Marches" as the first in their collection. It is full of the sound of war but this is interspersed with the gentler thoughts of home, such as is suggested by the playing of the song "The Snapped Willows." The intense suffering of the soldiers in their campaign on a distant frontier is made possible by their devotion to their leader Ho P'iao-yao. The end of the scene is an era of peace. The hero Ho would have been still more impressive if the reference to his portrait had been more correctly translated as

And the portrait of Ho P'iao-yao
Unrivalled hangs in the Lin Pavilion.

The thought of the original is that Ho's achievements were so great as to entitle his portrait to hang in the Pavilion so conspicuously that those of other heroes would not be seen. "No color mists the trees," "Swords brush the hoar-frost flowers of the Barbarians' country" and "Now indeed have they won the right to the soft, high bed of peace" are especially fine lines in this martial lay. An excellent metrical version of this song by Charles Budd appeared in his "Chinese Poem" (1912), but in it some of the best phrases are omitted.

The opening ejaculations of "The Perils of the Shu Road" (p. 6) as uttered by the men of Shu (Szechuan) when thinking of the road to their home seem very tame in the translation "Alas! alas!" for these three characters "Ee, shee, shee" are as striking to the Chinese ear as any of the imitative suggestiveness of "The Bells" of Poe. This poem is excellently described by Waley as "Nearer akin to music

than to poetry, with its wild profusion of long and short lines and its cataract of exotic verbiage." This poem is so well-known as a supreme example of Li T'ai-po's rebellion against the formality of contemporary prosody and of his return to the freedom of ancient versification that it is a pity its beauty had not struck more deeply into the souls of the authors. In its present form one of Li T'ai-po's masterpieces has become one of the dullest of their collection. It was composed in honor of the journey of the brilliant Ming Huang to Szechuan and is one of the best examples of poetical compositions which can be set to music.

"The Beautiful Woman Grieving before her Mirror" contains many pretty lines:—

"I sit at my dressing-stand and I am like the green Fire-bird who, thinking of its mate, died alone
My husband is parted from me as an arrow from the bow-string."

The last line of this song does not fulfil the first requirement of any translation which is to make sense. It reads as follows:—

"My tears, like white jade chop-sticks, fall in a single piece before the water-chestnut mirror."

The original is perfectly clear "My jade chop-sticks drop together in front of my mirror." The "tears" are a hidden reference as is also the "water-chestnut" but in both cases either the explicit or the implicit meaning must be chosen; It does not seem fair to bring both into the translation. The place for one or the other is in the appended notes.

Ch'ang Kan (p. 28) reminds one that it supplies great possibilities for collaboration between poet and scholar for this poem has recently appeared in "Asia" in a translation by Witter Bynner and Kiang Kang Hu. Mr. Bynner is a poet of acknowledged standing and Mr. Kiang is an unusually good Chinese scholar, so that their combined work commands serious attention. In many respects their version of Ch'ang Kau is preferable to the Ayscough-Lowell. They carry the song along in the first-person, thus making it more attractive than that in "Fir-Flower Tablets" where the third-person is used in the first two lines:—

"My hair had hardly covered my forehead
I was picking flowers, playing by my door
When you, my lover, on a bamboo horse,
Came trotting in circles and throwing green plums."

This is the Bynner-Kiang rendering and it seems more direct and pleasing than—

“When the hair of your Unworthy One began first to cover
her forehead

She picked flowers and played in front of the door,

Then you, my lover, came riding a bamboo horse,

We ran round and round the bed and tossed about the
sweetmeats of green plums.”

“Learning that love survives the dust” is better than “I wanted to be with you, as dust with its ashes” and I like “Ch’ang Sha” in the last line of Bynner’s better than the “Long Wind Sands” of Lowell. As a matter of fact it seems to me that both poets have gone quite too far in their translation of the meaning of the names of persons and places. There can rarely be an agreement between any two authors in the poetic interpretation of such names. The “Looking for Husband Ledge” of Lowell becomes the “Tower of Silent Watching” and even Lowell herself makes it a “rock” on page 86. The name is Wang-fu Shih or the Wang-fu Rock. In both versions an attempt is made to convey a meaning which turns out only to be a hint, while the hidden reference is not wholly explained till one consults Mrs. Ayscough’s notes. Where a magnisonant translation of a proper name can give a fairly accurate and complete rendering of a reference, it is quite justifiable, but in most instances the sound of the names should be used, reserving for the Notes necessary or desirable explanations. For instance, Chin Ling in the poem is better as the ancient name of Nanking than “The City of the Golden Mound” in the title (p. 70).

It is a good omen for the future that it will be possible to contrast Lowell and Bynner, Kiang and Ayscough, for work in a common field will tend to cause both poets and translators to look most carefully to their ways. As compared with all that have gone before them, these two sets of collaborators must be placed in a new class but fortunately we shall have the opportunity of comparison each with the other.

It may be that I have spoken too sweepingly of the work that has preceded this of the poets. Giles was not a poet, no matter how nearly he missed being one, but I prefer his version of Li T’ai-po’s Drinking Song to Miss Lowell’s as found on page 39. Giles caught the spirit and

romance of the bibulous Li who was the same kind of a genius as Burns:—

An arbour of flowers
 and a kettle of wine;
 Alas! in the bowers
 no companion is mine.
 Then the moon sheds her rays
 on my goblet and me
 And my shadow betrays
 we're a party of three.

Though the moon cannot swallow
 Her share of the grog,
 And my shadow must follow
 wherever I jog,—
 Yet the friendship I'll borrow
 and gaily carouse,
 And laugh away sorrow
 while spring-time allows.

See the moon,—how she glances
 response to my song;
 See my shadow, it dances
 so lightly along!
 While sober I feel
 you are both my good friends;
 When drunken I reel,
 our companionship ends.
 But we'll soon have a greeting
 without a good-bye,
 At our next merry meeting
 away in the sky.

How much preferable “we're a party of three” is to Lowell's line “my shadow opposite certainly makes us three”—or Waley's “For he, with my shadow, will make three men.” The “three” that are referred to are the moon in the heavens, the shadow in the cup and the poet. Neither the version of Giles or Lowell gives the usual interpretation of the shadow which is that of the poet in his goblet, and not on the ground. An advantage of Giles' rendering is that it calls attention to the caesural pause which is always found in Chinese poetry—

Hua chien (an arbour of flowers
 i hu tsiu and a kettle of wine)

This “Drinking Song” has a line of five characters with the caesura after the second character. A drinking song without rhythm is almost inconceivable even with such a ribald line as Miss Lowell's “Oh, be joyful! One must make the most of spring.” One cannot imagine Burns' “The Whistle” or “John Barleycorn” in *vers libre*.

This leads to the observation that the greatest fault of "Fir-Flower Tablets" is its monotony. The rollicking Li T'ai-po and the melancholic Tu Fu, the gentle Wang Wei and the rugged T'ao Yuan-ming all melt into the same poetic flavour. There is much more vivacity in Miss Lowell's "Legends" than in her "Fir-Flower Tablets." Perhaps in future a closer collaboration even than happened in the production of this volume between the poet and scholar may have the happy result of Mrs. Ayscough's being able to help Miss Lowell catch the differing spirit of the Chinese poets. Miss Lowell is a poet of many moods and can readily suit her language to her moods. We shall look for a larger differentiation in the style of various original poets in the next volume of translations which is sure to come, and a nearer adaptation to their spirit. Or perhaps poets might be taken one by one in separate volumes and at different times. The explanation of the tone adopted throughout may be found in the fact explained in the Preface that the approach of Miss Lowell to Chinese poetry was first made through Mrs. Ayscough's translations of "Written Pictures." Now it is always true that these "Written Pictures" are much more careful in their provision of high moral cogitations than of true poetical inspiration. Their influence has lent a certain soberness to Miss Lowell's lines which are not the universal rule of the originals.

A help might be found if poems-shih, such as Fêng Huang T'ai, lyrics-fu, such as "Poignant grief during a Sunny Spring," songs-Ko such as "The Beautiful Woman Grieving before her Mirror" and ballads—yo fu, such as "The Perils of the Shu Road," would be arranged in classes as is usual in collections of English poetry. This is a simple device but it strikes at the very roots of the variations of the Chinese originals and would have beneficial effects both upon the authors of translations and upon their readers. Chinese poetry has a wonderful range of subjects. It has also many metres. The decision of the authors to pay no attention to the metre of the originals as controlling the metre of their translation, though wise, could have been supplemented by a "Metrical Index" such as is common in editions of Horace. This would have called for a clear description of Chinese metres in the Introduction, but this description could have been provided easily by Mrs. Ayscough. Such an Index was before Miss Lowell in the form of the Chinese text supplied to her by Mrs. Ayscough. Any benefit which Miss Lowell derived from this knowledge

could be shared with her readers by giving this suggested Index.

The poems are not the whole of this interesting volume. We have a map of Ancient China, wisely introduced as a guide to the location of the districts which are so frequently referred to by their ancient names. We have a plan of a Chinese house which seems more or less superfluous, but Mrs. Ayscough's "Introduction" and "Notes" are very valuable and in these she shows a commendable mastery of her subject. She is by no means a pioneer in such work, as can readily be seen from an examination of Cordier's "*Bibliotheca Sinica*," but she may justly claim to have succeeded in stating her understanding of Chinese Poetry in such a way that a new interest in it has been aroused in the hitherto unmoved literary circles of the world. It caught and fascinated Miss Lowell which is its first and greatest result and it is sure to hold her. One may escape the charm of things Chinese by ignoring them, but once an acquaintance has been made, life-long friendship surely follows.

The Introduction was the first thing that attracted me when I opened the volume and I read it through to the end before reading a line of the poetry. My feeling, as I read on and on, was that here were found at last sympathy with and appreciation of the point of view of China's poetry; and furthermore that neither of these necessary qualifications had been allowed to obliterate the keen critical faculties of Mrs. Ayscough. That which delights not infrequently becomes a clog to discrimination, but it has not been so with Mrs. Ayscough. Her nearest approach to a loss of critical faculties is in her generous characterization of the statements concerning the drunkenness of the T'ang period as a "genial hyperbole." Unfortunately the facts of history teach otherwise. The suggestiveness of "The Beautiful Woman Encountered on a Field-path" (p. 49) and of "Moon Night" is perfectly apparent in the original Chinese but wisely, perhaps, is closely veiled in the translation.

As compared with the Introduction of Charles Budd's "Chinese Poems" Mrs. Ayscough has devoted disproportionate space to the two Chinese poets Li T'ai-po and Tu Fu, neglecting all others. Budd's plan seems better for the general reader. Waley's Introduction to his "170 Chinese Poems" (why the number was ever used in the title of a collection of poems remains a mystery) is more scholarly but less illuminating than Mrs. Ayscough's. Waley's paragraph on "Technique" is absolutely essential

to a full appreciation of Chinese poetry and Mrs. Ayscough should have given even fuller explanations than Waley. But Mrs. Ayscough has given many things which neither of her two predecessors has furnished and her Introduction is in reality Part I of the book with the Poems as Part II and the Notes as Part III. The Introduction could be enlarged into a book by itself treating of the Principles of Chinese Poetry, and it would be very valuable.

The notes are rich but hard to use on account of the curious system of numbering which provides no connection with the pages on which the poems can be found. Would it not be much better to indicate at the bottom of page 12 that there is a note on this poem on page 181 and after the name of the poem in the notes to add the number of the page on which the poem can be found. This method would call attention to the Notes which are a mine of information necessary to the text while at the same time it would facilitate their fullest use.

Of small errors of translation or of typesetting no mention need be made. The authors will be the first to detect these and will remember them longest. The frankness of statement in the Preface, the charming scholarship of the Introduction, the truly poetic versions of the poems and the full information supplied in the Notes—these are the outstanding features of a book which forms a strong new link between the cultures of the East and West.

To the Editor N.C.B.R.A.S. Sir: When Dr. Ferguson wrote his delightfully appreciative, and most helpful review of "Fir-Flower Tablets" he very courteously sent me a copy. May I therefore, write a line in regard to it.

"Ch'ang Kan" p. 28; How far the translation of Chinese names should be carried is a matter of disagreement, there is, however one point upon which unanimity exists; *i.e.* If Chinese names are kept they should be correct. In using "Ch'ang Sha" Mr. Bynner suggests that the place referred to is the Treaty Port in Hunan, whereas Ch'ang Fêng Sha 長風沙 Long Wind Sands, as it appears in the poem, is at Chih Chou 池州, 安徽 in Anhui, seven hundred *li* from Nanking.

"Moon Night" p. 118; This was written during Tu Fu's captivity, while his family lived at Fu Chou. The Commentary states "The poet thinks of his wife and children."

"A Beautiful Woman etc." p. 14. The words "Jade Chopsticks" are a well-known allusion explained in the Notes. Fearing that it might escape the reader the Commentator inserts "jade chop-sticks are tears." 玉筯淚也

FLORENCE AYS COUGH.

LAN-TSIH

Mrs. ELFRIDA HUDSON

ROMANCE OF THE SECOND CENTURY B.C.

Lan-tsih counted thirteen summers
When she learnt to spin the silkthread.
Needle-work she learnt at fourteen.
She played her guitar at fifteen;
Sixteen years old she studied
History and famous poems;
And at seventeen she married.



Cloudless skies of happy childhood.
Then with lowering clouds grew heavy.
Absent all day was her husband
In the Office of the Prefect,
Whom he served as secretary.
Lone she sat in her apartment;
Early in the morn at cock's crow,
She was at her loom already.
Worked till late when darkness stopped her;
Three rolls in five days she finished.
Still her husband's mother scolded,
Said to her she worked too slowly.

"No," said Lan-tsih, "all my trouble.
Is that I am here a stranger.
T'is impossible to please thee,
Tried I have with all my power.
Now I can endure no longer.
Kindly send me to my mother."

The young husband greatly troubled,
Went at once to see his mother,
And thus reasoned with her gently.
"From his face it is predicted,
That thy son will ne'er be famous.
Fortune has how'er been gracious,
Given him a wife, who is perfect.
Since the nuptials us united,
We have shared one mat and pillow.
Till we meet at the Yellow Fountain
We'll be faithful to each other.
Blameless always is her conduct.
Why then dost thou treat her harshly?
Maybe within two or three years.
We can set up house together."

Then to him replied the mother:
"From thy words I gather plainly.
That her influence corrupts thee.
She has awkward country manners.
And a wilful disposition.
I don't like her," said the mother.
"East of here there lives a lady,
Tsing Lu-fu, both rich and noble.
Let me seek that girl in marriage.
And dismiss this 'good-for-nothing'."

Chow then reverently kneeling.
Pleaded with her in deep anguish.
Rising he with these words ended:
"Never shall I wed another,
If my true wife is rejected."
Angrily the mother answered:
"Son, undutiful I call thee,
In this manner to defend her.
Speak no more to me of Lan-tsih,
Never yield I in this matter."

Mute stood Chow and once more kow-towed,
Then he went into his chamber.
With his youthful wife to counsel.
Broken-hearted he embraced her,
As with violent sobs he whispered:
"Not by me art thou rejected,
Unjustly my mother hates thee.
For a time go to thy parents,
And I soon will come and fetch thee.
Pray, do not take this to heart, love.
I shall truly keep my promise."

"Why make matters more confused?"
Lan-tsih answered. "New Year's season
Left I home and crossed this threshold.
Faithfully I've served your parents,
From my work I rest nights only.
Hard I've tried to win their favour.
Now, when I'm rejected, never
Speak to me of soon returning.
When I came I brought as dowry
Silken dresses richly brodered,
Heavy gold-brocaded curtains,
Scent bags sewn into the corners;
Sixty, seventy trunks and boxes
Wound around with green silk cording;
Diverse things of all descriptions.
When a wife is good for nothing,
Her belongings can't have value.
Mine, I know, are far from suited.
To be used by my successor.
When I go, I'll take them with me.
Cruel fate has us divided."

Vainly Chow spoke comfort to her,
Pleading with her to be patient.
Early, when the cock was crowing,
Daylight in the East beginning,
Lan-tsih rose from troubled slumbers,
Donned a robe, sewn with bright colours,
Stepped into her silken slippers.
Then she, restless, paced the chamber.
Bright shell comb adorned her tresses,
Like the moon her earrings glimmered,
Her slim form was like a fairy's
As with sylph-like grace she moved.
Rarely was there lovelier maiden.

Thus she the large Guest Hall entered,
Greeted low her husband's mother,
Who had seen her preparations
But done nothing them to hinder.

"Brought up in the country am I,
Ignorant of polished manners.
I am very grieved." said Lan-tsih,
"That I could not win your favour,
Thou hast often given me presents.
Silk, and gold, and many trinkets,
I am sad, I've failed to please thee.
Still when I am gone, it may be
Thou wilt miss my care and service."

But when from the little sister
Lan-tsih parted, then the tears flowed
Un-controlled: "When I came here,
Little girl you were, so pretty,
Now you're nigh as tall as I am.
Care with love for parents aged,
Be, as ever, brave and gentle.
Think of me sometimes. Remember
The good times we've had together."

Then from out the house passed Lan-tsih,
Stepped into the carriage waiting,
Chow, in front, his horse was riding.

On the highroad Chow alighted,
And to Lan-tsih bent and whispered:
"To thy parents pay a visit,
Very soon, I'll come and fetch thee.
By High Heaven I'll keep my promise."

"Deeply does thy love affect me,
I'm thy faithful wife for ever.
If my husband like a rock be,
Like Nan Mountains, strong, unshaken,
I'll be like the Typha rushes,
Which together bound, break never.
Still my heart has great misgivings.
Both my father and my brother
In their anger are like tempests,
And if they should both oppose me,
Then my heart may fail for terror."

Long together stood the couple,
Hand in hand in silent sorrow;
Yearning deeply for each other,
As with heavy hearts they parted.

Just outside the parents' Guest Hall
Lan-tsih stopped and hesitated
Whether to go back or onward.
From the hall her mother saw her,
Lifted up her hands in horror,
Much perturbed to see her daughter
Coming lone and un-attended.

'When you counted thirteen summers
You had learnt to spin the silk thread.
At fourteen I taught you sewing,
The guitar you played at fifteen,
And at sixteen you had mastered
Etiquette and polished manners;
Then at seventeen you married.
Ne'er a bad word have you spoken,
Nor in other ways transgressed.
Still you come home un-attended.'

"Mother, I have done no evil,"
Answered Lan-tsih with head drooping.
Great the mother's grief was. Loudly
She lamented this great insult.

Lan-tsih stayed home ten days only,
When the official of the country
Middlemen dispatched thus saying:—
"This young man, for whom we're speaking,
Is the third son in the family.
(Quite as good howe'er as second)
He is eighteen years or over,
He is clever, skilled in letters."

"Would you like this man to marry?"
Asked the mother of her daughter.
Lan-tsih answered agitated:
"When I left my husband's dwelling
He with earnestness implored me
Ne'er again to wed another.
To him I my faith have plighted,
And if I should break this promise,

I could ne'er again be happy."
Following message sent the mother:
"Only lately has my daughter
To her parents home returned.
She regrets, she is not able
To fill this dignified position."

Later came upon a visit
The assistant of the Prefect
And his registrar came also.

Spoke of Master's handsome daughters
Who at Court held high positions.
Praised especially the fifth son,
Who, alas, was still un-married.
Then they spoke straight out their errand.
They had come to make proposals
From the Prefect's son for Lan-tish.

The mother thanked them for the honour,
Regretted that she must refuse it.

The brother heard of this proposal.
Full of wrath he spoke to Lan-tsih:
"Foolish art thou! Thy first husband
Only was a secretary;
Now a prefect's son desires thee.
Luck un-heard of, I assure thee.
If thou dost not want to marry,
Who, dost thou think, will support thee?"

"Maybe thou art right, my brother,"
Lan-tsih with bent head then answered.
"My own home I'd left already,
Then returned to be a burden.
Unrelenting Fate compells me;
To thy will I must surrender.
Tell him I accept his offer."

Then the middlemen elated
Rose from velvet-covered cushions,
Took their leave and to the Prefect
Brought the words of happy issue.

Much delighted was the Prefect
He the Calendar examined,
Chose the soonest day auspicious
For the wedding and thus ordered :—
“ Son, this is the twenty-seventh,
Thirtieth is the day most lucky.
With despatch make all things ready,
Fetch the bride here for the wedding.”
While he spoke the servants hurried
To obey quick-given orders.
Like as clouds by winds are driven,
So the busy crowd of menials,
Hurried with officious aspect.

A sailing bark was ‘mongst the presents
Like a crane’s shape was it fashioned,
Graceful dragon sails were loosened,
Swift it plied the rippling waters.
Then a carriage all resplendent
Wheels with precious stones were glistening.
Dappled horses, harnessed to it,
Stamped the ground and neighed impatient.
Other wedding gifts were silk rolls
All in shades of different colours.

For the sumptuous feast were ordered
Many dishes quaint and tasteful.
Last, three million cash were sent her,
Neatly strung with silken tassels.
To accompany the bridegroom
Were five hundred men assembled.

Lan-tsih’s mother spoke with sorrow :—
“ Word has come from the prefecture,
That to-morrow they will fetch thee.
Why preparest thou not thy bride’s dress?
Ah, my heart has sad forebodings ! ”

Dazed was Lan-tsih with her grieving,
Down her pallid cheeks the tears rolled,
Silently she took the satin,
Sat her down beside the window.
Skirt of silk by noon was finished
And by night her filmy garment.
After sunset in the darkness,
While for grief her heart was breaking,
She went out to weep in secret.



Chow who heard of this proposal,
 Had asked quickly leave of absence;
 In despair he rode to Lan-tsih.
 Now, from far, the plaintive whinny
 Of her husband's horse she noticed,
 And she ran with haste to meet him.
 Agony her face distorted,
 As with trembling lips she whispered:
 "I am promised to another,
 I am forced again to marry.
 Relatives have now arranged all.
 Thy return they had no faith in."

Then the husband answered grimly:
 "I congratulations offer,
 That thy fortunes are secured.
 Though un-moved stands the mountain,
 And will stand for thousand years more,
 Ah! The Typha rush is broken!
 Torn apart in one night only.
 Mayst thou rise to highest honors!
 I my lone and dreary pathway
 Follow to the Yellow Fountain."

“ Why thus speak'st thou? ” Lan-tsih answered,
Have we both not deeply suffered?
At the Yellow Fountain meet me.”

In the silence of the mid-night
Lan-tsih found her way out softly,
Out into the peaceful moon-light,
Walked along the rushing river.

“ So my weary life will end here,
And my soul will leave its body,
Go to meet its well-beloved.”
Saying this she dropped her garment.
Stepped out of her silken slippers.
Just a plunge, and gone was Lan-tsih,
Buried in the crystal waters.

When her husband heard these tidings
That his young wife had departed.
Out he walked into the garden,
Walked its paths in restless anguish.
Then his spirit rose triumphant,
He would meet her at the Fountain.
Following morn they found his body
Hanging in the pine tree branches.

So in death they were united,
And together they were buried
At the foot of the Hwo-san Mountains.
Pines and cypresses were planted
At the corners of the grave mound.
And the Wu-tung tree grew luscious,
Grew upon the mound luxuriant,
And its branches twined together,
Till they formed a leafy cover.
Yung-yang birds beneath it nestle,
Every night they sit together,
Calling each the other, cooing,
Even when the fifth watch soundeth.
Wanderers stand still and listen,
Widows hurry past the grave mound.
To the coming generations
This sad tale of two young people
Does impart a useful lesson.
May they heed it and take warning!

LING YIN MONASTERY POEM.¹⁵

SUNG CHIH-WÊN.¹⁶

Deeply embower'd in leaf the Eagle Ridge towers high:
Locked in the Dragon's Court the quiet spaces lie.

¹⁵The poem here translated is from the "West Lake Records." It is called a poem of the Ling Yin Monastery 靈隱寺, but it is more closely connected with the T'ao Kwang Convent 韜光菴, which is on higher ground above Ling Yin, and may originally have been an appendage of that large monastery. The third and fourth lines are especially applicable to the T'ao Kwang Convent, which commands a distant view of the Chientang River beyond the city of Hangchow, a view which cannot be seen from the lower Ling Yin Monastery. At the present day this couplet is to be found in a stone pavilion on the hill side just above the T'ao Kwang Convent; and in a book recently published descriptive of the scenes in the neighbourhood of the West Lake, in which two scholars of the well known Ting family had a share (Ting Shang-tso 丁上左, styled Chu-sun 竹孫, and Ting I-pu 丁以布, styled Shüan-chih 宣之), it is also referred to that Convent.

¹⁶Sung Chih-wên 宋之問, styled T'ing-ch'ing 廷清, who died in A.D. 710, was one of the most popular poets of his time. He was a native of Fen-chou in Shansi, and we are told that his personal appearance was martial and imposing. He became a military commander, was involved in rebellions and many discreditable affairs, and finally committed suicide.

It is said that the Emperor Chung Tsung 684-710 (A.D.) was on one occasion so pleased with his verses that he gave him his own imperial robe of silk.

| | | | | | | | | | |
|---|---|---|---|---|---|---|--|--|--|
| 待 | 夙 | 霜 | 捫 | 桂 | 樓 | 鷺 | | | |
| 入 | 齡 | 薄 | 蘿 | 子 | 觀 | 嶺 | | | |
| 天 | 尙 | 花 | 登 | 月 | 滄 | 鬱 | | | |
| 台 | 遐 | 更 | 塔 | 中 | 海 | 峩 | | | |
| 路 | 異 | 發 | 遠 | 落 | 日 | | | | |
| | | | | | | | | | |
| 看 | 搜 | 冰 | 剗 | 天 | 門 | 龍 | | | |
| 予 | 討 | 清 | 木 | 香 | 對 | 宮 | | | |
| 度 | 滌 | 葉 | 取 | 雲 | 浙 | 鎖 | | | |
| 石 | 煩 | 未 | 泉 | 外 | 江 | 寂 | | | |
| 橋 | 鶯 | 凋 | 遙 | 飄 | 潮 | 寥 | | | |

The balcony views the Sun from azure sea appearing;¹⁷
 The gateway fronts the Tide up¹⁸ Crooked Stream
 careering.

Beneath the Moon's soft rays the cassia blossoms fall,
 And wafted to the clouds the fragrance floats o'er all.
 Scaling to pagod high to orchid roots I cling;
 In hollow log I bring cool draughts from distant spring.¹⁹
 E'en when the white frost falls the hillsides blossom
 freer,
 And when the pure ice forms the leaves are not yet
 sere.

To visit wondrous things delighted once mine eyes,
 And speculation deep my breast did tranquillize;
 But soon I take the road to T'ien-t'ai's²⁰ height serene,
 And crossing o'er the Bridge of Rock I shall be seen.

¹⁷This couplet is said to have been composed in the following way. Sung Chih-wên, who was lodging in the Monastery, had written the first two lines, and was racking his brains as to how to proceed, when a bonze walked up, looked at what he had written, and suggested the third and fourth lines, which were accepted. The story goes that this bonze was no other than the famous Lo Pin-wang 駱賓王, who was then living in retirement.

This Lo was a native of I-wu in the province of Chekiang, who early distinguished himself as a poet, and received an appointment under the Emperor Kao Tsung. On the death of this monarch in A.D. 684 he espoused the cause of the legitimate heir, as opposed to that of the Empress Wu Hou who usurped the throne for twenty years. Some say he perished with others of his party: others that he retired to a monastery, and became a Buddhist monk. Hence the story about this couplet.

¹⁸The Crooked Stream is the Che-chiang (浙江), otherwise known as the Chientang River, which is noted for its great Tidal Wave or Bore, to which reference is here made.

¹⁹What is said about the "hollow log" may refer to conducting water from a spring on the hillside through hollowed bamboo stems, which is done to this day, for the use of the Monastery.

²⁰On the T'ien-t'ai hills in the prefecture of Taichow in the province of Chekiang there have been famous Buddhist monasteries for centuries. The poet may be speaking figuratively of entering upon a lofty state of Buddhist contemplation; or he may be expressing his intention of going literally to T'ien-t'ai. On the hills there a famous Stone Beam Bridge 石梁橋 exists, to which reference may be intended in the next line. This bridge and its environs are thus described in Edkins's "Chinese Buddhism":—

"After penetrating several miles farther to the north-west in this hilly and desolate region, Chi-k'ai arrived at the remarkable rock bridge where the Fang-kwang Monastery now stands. The loud roar of the waterfall, and the close-set woods on the hills around, the two mountain brooks uniting before they reach the cataract, then passing beneath the natural bridge down the fall, and thence pursuing their way to the north, united to give this spot an air of grandeur in the hermit's mind. It seemed a home for supernatural beings."

SOME GEOLOGICAL NOTES ON THE COAL AND IRON ORE DEPOSITS IN THE CARBONIFEROUS SEDIMENTS OF CENTRAL SHANSI

E. NORIN.

Before entering upon the subject in question, I propose to give in advance some information concerning the character of the "Shansi Formation." This name was introduced by Bailey Willis as a comprehensive term including a very thick complex of Late Paleozoic and Mesozoic, mainly continental, sediments which at one time have covered the greater part of N. and W. China. They are considered to be equivalent to the continental deposits of the Angara series in Central Asia and Siberia which have got their name from the old Angara continent, on the surface of which they were deposited.

In the central parts of Shansi the following subdivisions can be established:

- 1.—The Carboniferous, coal-bearing series, composed of interbedded continental and marine deposits. The main part consists of black clay sediments, white quartz-sandstones and coal seams. The thickness of the series varies, but seems seldom to exceed 250 metres.
- 2.—A Permian Series consisting of light-coloured, grey, yellow or greenish clay-sediments and sandstones amongst which marine limestones and coal-seams are missing. These deposits are probably formed during a moist and comparatively cold climate. In the upper part of the series there enters a new type of weathering products which form the transition to the following Triassic series. The thickness of the Permian sediments are about 200-300 metres.
- 3.—The Triassic Marl and Sandstone formation; its older sediments—
 - (A) Consist of chocolate-coloured clay-sediments, argillaceous marls and gypsiferous breccias, interbedded with redbrown and pinkish sandstone.²¹ The thickness of (A) is about 300 meters.
 - (B) Its upper part is mainly composed of lighter or darker, often fine-grained, well stratified sandstones, which often show diagonal bedding. There are also to be seen subordinate layers of red-brown, sandy, argillaceous shale. The thickness of (B) is larger than 250 M.

²¹ In the lower parts occur also yellowish-white sandstones and greyish and yellowish shales.

These Triassic sediments have probably been formed during a warmer and more arid climate than has been the case with the Permian ones.

4.—Lower Jurassic Coal Series,²² found in N. W. Central and N. Shansi built up mainly of grey or white sandstones and blue or green and black argillaceous shales. In the Ta-T'ung basin in N. Shansi this occurs according to C. C. Wang in very much varying thicknesses up to 480 metres.

5.—Upper Jurassic Red Series (C. C. Wang),²² consisting of red and green sandstones and argillaceous shales.

Within this complex (1 to 5) of which the total minimum thickness amounts to 1,500 metres, at least two unconformities seem to exist, a probable one in the marginal district of the Taiyuan basin between the Upper Carboniferous and Lower Permian (Rothliegende), and one has been pointed out by C. C. Wang in N. Shansi between the Triassic and the Lower Jurassic. Between the Permian and the Triassic no unconformity has been discovered; on the other hand the transitation here between Paleozoic and Mesozoic is marked by indications of climatic change.

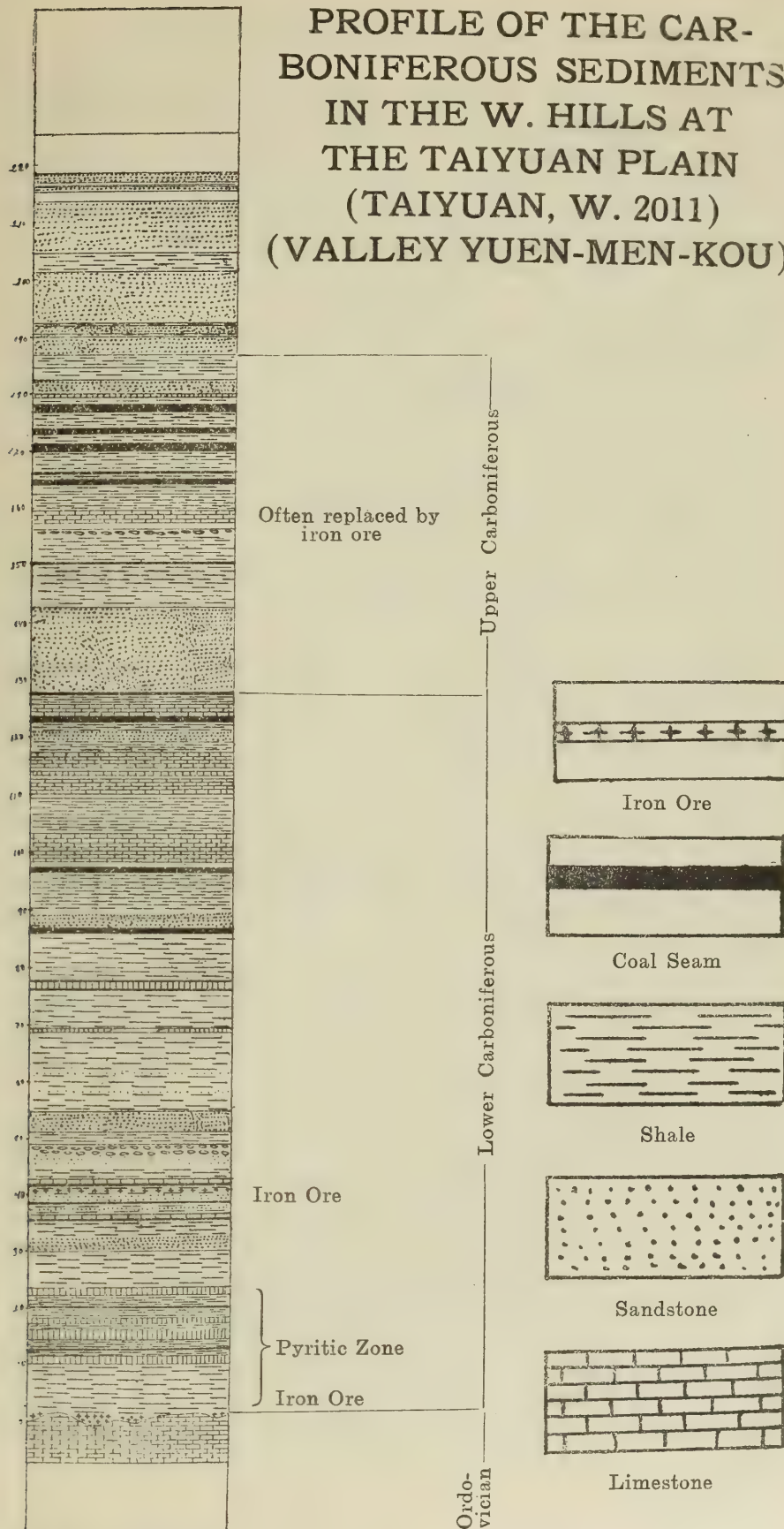
The main part of the mineral wealth of Shansi is bound to the Carboniferous series of sediments. The most important products that are won here are coal, iron and sulphur. The tenure of pyrites in the carboniferous layers are also indirectly the source of the Gypsum, which in many places occurs in workable quantities within brecciated zones in the ordovician limestone.

Apart from the material supplied by the cambro-ordovician sediments in the form of building stone, lime and the above-mentioned secondary Gypsum, this formation and its pre-cambrian substratum offer only small quantities of useful minerals. The same holds good for the Permian and Triassic sediments. In Central, Eastern and Southern Shansi, the mineral resources are concentrated to the zone of comparatively inconsiderable thickness which is constituted of the Carboniferous and, in S.E. Shansi, also the Permo-Carboniferous of the "Shansi Formation." It is therefore to be recommended from a practical point of view to define this zone with the new name "The Economic Zone of Shansi."

The sediments of the carboniferous coal-series in Central Shansi attain a thickness of 150 to 250 metres. The most

²² According to C. C. Wang: "The Coal Field of Ta-T'ung, Shansi" Bull. Geol.-Surv. of China, November 3, 1921, page 71.

PROFILE OF THE CAR-
BONIFEROUS SEDIMENTS
IN THE W. HILLS AT
THE TAIYUAN PLAIN
(TAIYUAN, W. 2011)
(VALLEY YUEN-MEN-KOU)



characteristic feature in the stratigraphy of this complex is the comparatively frequent alternation between marine and continental sediments.

On the whole the entire coal formation is constituted of a series of sedimentary cycles within which the succession of rocks seems to be according to following table:

FROM BELOW.

- 1.—Quartz Sandstone.
- 2.—Black, sometimes pyritic, argillaceous shale with banks of more calcareous clay-material; the upper levels often show prints of plant-roots.
- 3.—Coal-Seam.
- 4.—Black argillaceous shale, with plant-roots.
- 5.—Marine, dark and often flinty limestone or calcareous shale.
- 6.—Black, often plant-bearing argillaceous shale.
- 7.—Quartz sandstone, corresponding to No. 1.

This ideal succession is often found, though not always, because of interruption of some kind in the course of sedimentation.

The lower age-limit of the coal formation can, according to determination made by Dr. A. W. Grabau, be put at Youngest Lower Carboniferous; this is the age of a fauna found in marine limestone in the lowermost part of the coal-series.

The upper age-limit is more difficult to determine because of the absence of marine sediments in the upper part. The youngest marine limestone (*see* Section) contains a fauna which according to Dr. Grabau seems to belong to Upper Moscovian.

An approximate upper time limit is, however, obtained by the presence of the coal-free, light-coloured, sedimentary formation of which the oldest layers have been found to belong to the Lower Permian (Rothliegende). These form the roof of the coal-series.

This Permian formation seems to be separated from the coal-series by an unconformity through which at different localities Permian sediments have come to rest upon different horizons of the Carboniferous. At some places a large part of the Upper Carboniferous has been removed, by which also many of the valuable coal-seams have disappeared.

This is for example the case in the border districts of the Taiyuan basin: in the Western Hills it is mainly bituminous, upper Carboniferous coals that are mined, whereas in the Eastern hills these are absent and the coal is won from the older seams which mainly consist of anthracite.

Coal-seams occur throughout the entire Carboniferous series. The oldest are generally thin, seldom more than one foot in thickness, but the higher we proceed upwards the thicker are the seams encountered. The maximum seams are met with in the uppermost part of the coal series and are probably of *Upper Carboniferous age*.

The section I have taken through the Carboniferous sediments in the marginal districts of the Taiyuan basin, shows that the coal seams are in most cases intimately connected with marine horizons, and generally appear immediately below these; being separated from them by a sometimes thin, sometimes more thick horizon of black plant-bearing clayey sediments. This is, however, not always the case, because sometimes the roof of the coal-seams is formed by quartz-sandstone. Of thirteen observed coal-bearing horizons, ten appear just below marine limestone, whereas three are super-imposed by quartz-sandstone. (*See Section*).

Of the primary stratigraphical conditions which have prevailed in the roof of those layers which contain the maximum coal formation, I am unable to form an opinion for the reason that between the latter formation and the superimposed Permian sediments an unconformity has occurred.

The intimate connection between the coal seams and the marine sediments seems to indicate that the material in the coal seam has been accumulated in the vicinity of the sea, to be more explicit on the frontier between the sea and fresh water basins.

As has been pointed out by J. Walther the importance of water for coal formation lies in the fact that although large quantities of cellulose can be formed above as well as below water level, yet it can only be *stored* in great masses if it is protected by a covering layer of water.

Walther points out that in warm and moist climates the cellulose of the plant-remains become—when air gets access—decomposed by bacteria which break up the cellulose mainly into gaseous substances. “Even in the tropical zone, so abundant in vegetation, the rotting plant-remains are accumulated only where the jungle soil is kept constantly moist or where the level of groundwater rises above it.”²³ (J. Walther: A. Allgemeine Palaeontologic, 1 Teil, p. 162).

This theory might furnish an explanation of the succession of sediments in the coal formation of Central Shansi

²³ Translation by E. Norin.

and the relation of coal seams to the marine horizons. These seams may here be considered to have been swamps situated within a low-lying shore district or lagoons in which large quantities of rotten plant-remains have accumulated and afterwards through an invasion of the sea been saved from annihilation. These transgressions of the sea are now marked by the presence of the marine limestones.

The frequent occurrence of marine sediments as intercalations in the continental deposits and the variation of petrographic character of sediments in a direction perpendicular to the stratification, shows that the region in question has been subjected to rhythmic subsidences with accompanying minor transgressions of the sea. Parts of these invaded areas may possibly, in the course of continued sedimentation, have been separated from the sea, and the continental sediments have accumulated until, through a renewed subsidence and renewed transgression, the same cycle has been repeated.

Amongst the Carboniferous coals we find, as mentioned above, in the border-districts of the Taiyuan basin, both anthracitic and bituminous seams. The latter are best developed in the Upper Carboniferous and may represent the time for maximum coal-formation. The Lower Carboniferous seams contain either semi-anthracitic or bituminous coals; the former predominating.

The largest coal mines in the Western margin of the Taiyuan basin are: Fu Ho Yao, Tung Ta Yao, and Lo T'o Po Yao which work in the Upper Carboniferous bituminous zone. The seam has in outcrop the thickness of $\frac{1}{2}$ to 2 metres, but the mining is generally going on where the coal, through formation of pockets, attains a thickness of 3—4 metres.

The largest semi-anthracite seams occur in the substratum of the thick, Lower Carboniferous, marine limestones.

One of the largest anthracite mines in the West is Hsi Sheng Yao.

In the North Eastern marginal hills at the Taiyuan plain, the largest part of the Upper Carboniferous became eroded away at an early stage—as mentioned above—and the maximum bituminous seams are therefore absent. A not inconsiderable part of the coal mined here is Lower Carboniferous, Semi-Anthracite and Lower Carboniferous, Bituminous coal. The outcrops of the anthracite seams seldom exceed 1 metre in thickness.

Concerning the coal-area in the plane of stratification it seems that those seams which have a roof of marine limestone have a larger extension than those which are superimposed by quartz-sandstone. The anthracites appearing in the middle of the coal formation and just below the resp-limestone have thus been met with in all places where those limestones have been observed within the Taiyuan basin. It is not impossible that to this anthracite zone belong also the large anthracite seams in the Ping Ting region. At Yang-Ch'uan, 20 li N.W. of Ping Ting Hsien, where the Pao Chin Mining Company have their headquarters, I have had the opportunity to study the nature of the coal formation. Also here the anthracites are connected with a series of marine limestones in the middle part of the coal series. Whether these marine sediments represent the same horizons as those at the Taiyuan basin is, however, not yet settled.

Our present Paper deals with the conditions in the Carboniferous of Central Shansi, but it ought to be mentioned that the bituminous coals which occur in the lower parts of the Jurassic in Northern, and also in certain places of Western Shansi, are of a quite different type. In contrast to the Carboniferous coals, which from all indications are formed in the vicinity of the sea ("Paralische Flötze") the Jurassic coals are continental deposits, formed at great distance from the ocean ("Limnische Flötze") and should as to their origin correspond to the Saxonian, Silesian and Bohemian coal-seams in Europe.²⁴ (For further information about the stratification of the Jurassic coal formation at Ta-T'ung in N. Shansi see the above mentioned paper by Mr. C. C. Wang).

The most important iron-ores which are connected with the coal-series in Central Shansi are those which occur immediately above the Cambro-Ordovician limestone. This ore-formation appears generally as nodules and concretions, very much varying in size, of limonite, sphero-siderite, and other hydrated iron-compounds; more seldom pyritic, rusty limestone or hematite. These nodules are embedded in a matrix of more or less decomposed, often strongly red-coloured, clay-sediments or argillaceous sandstones. The ore is very often found in the form of fissure-fillings or occupying pockets and cavities in the ordovician limestone substratum.

Though of an enormous regional distribution these ore deposits are comparatively seldom accumulated to such an

²⁴ Which are of Carboniferous age.

extent that smelting of iron on a large scale will prove remunerative.

How ores of this type can be formed in some cases is illustrated to a certain degree by the conditions observed within those ores which occur higher up in the coal-series, and which are met with right up in the Upper Carboniferous. They are of rather minor practical importance and are seldom exploited.

Specially characteristic for the occurrence of these latter ores is the fact that they are always intimately connected with marine sediments. They have usually the shape of round nodules or lenses of up to head-size, of argillaceous sphero-siderite which shows the common concentric structure or else pyritic, rusty limestone, and limonite. Continuous thin layers of Iron Hydroxide containing nodules of black flint, rusty limestone and concretions of sphero-siderite, have also been observed.

Similar conglomeratic ore-formations, though of smaller dimensions, occur almost as a rule just above most of the marine limestones which have been observed within Yang-Hsü-Hsien (the Tai-Yuan district) and seem always to be intimately connected with their marine substratum.

It is not impossible that part of these iron ores have in a secondary manner originated from the marine sediments through a metasomatic solution of part of these latter rocks.

Characteristic for most of the marine lime-sediments is their comparatively large tenure of Iron Sulphide (Pyrite). This appears microscopically as concretions of pyrite and pyritized fossils enclosed in the sediments. At the weathering of the latter a considerable amount of limonite is formed. The tenure of pyrite is specially high in the horizons of calcareous shale which are not infrequently found as intercalations in the marine limestone. These layers of pyritic shale are not seldom characterized by a unique abundance in fossils.

Nothing in the occurrence of the iron sulphide indicates that it should be a secondary formation, caused by impregnation of the sediments by iron-bearing solutions. The sulphide has probably been precipitated simultaneously with the deposition of the marine sediments and at a later stage a molecular re-arrangement has taken place, resulting in a transition to crystallized pyrite.

It does not seem improbable that at least part of the Carboniferous iron-ores have in a secondary manner

originated from these pyritic, marine layers. As a matter of fact it is seldom that in one and the same profile we find all the marine horizons that are to be expected. In the place of the missing ones we find more or less considerable layers of the iron-ore "conglomerate" described above. The transition from a fresh, pyritic limestone into an iron-ore layer can often be followed gradually step by step. The transformation often begins either in places where the limestone has been more or less subject to cleavage or where it has been broken up by tectonic movements. Here the normal limestone changes to a breccia-like formation of sometimes highly decomposed, rusty, soft limestone and argillaceous limonite.

The layers of pyritic shale merge into a rust-brown mass of limonite mixed with clay or schistose hydroxide of iron, in which the contours of the pyritized fossils can be traced. It will sometime happen that the primary marine sediments are completely missing in the outcrop and are substituted by a bank of spheroidal siderite concretions and rusty clay material.

Concerning the origin of the ore formations, it seems highly probable that at least part of them originate from the primary contents of pyrite in the sediments and especially in the marine shales. A specially pyritic zone is encountered in the clay sediments in the lower-most part of the Carboniferous, where in some localities the contents of pyrite become so enriched that they appear as nodules and are mined for the purpose of sulphur-manufacture (distillation from clay-pots). For the study of the stratigraphical conditions, *see* Section.

The iron-ores above described which are found just on top of the marine limestones may have been formed thus. Through oxidation process the sedimentary pyrite has been transformed to sulphate of iron, and part of this has through a still more advanced oxidation, become Hydrate of Iron; another part has by meeting with the calcareous sediments been converted to Carbonate of Iron.

The Gypsum present in fissures in the Ordovician Limestone may have originated from sulphate solutions formed by the above-mentioned chemical reactions within the Carboniferous.

The above described observations on the coal and iron-ores in the Carboniferous of Central Shansi indicate that the marine horizons have played an important role at the

formation not only of some of the coal-seams, as also of certain iron-ores. In the first case it is the marine transgressions, which are represented by the marine sediments, which have preserved the accumulated masses of cellulose which have afterwards been transformed to coal; in the latter case the marine sediments have partly furnished material for iron-ore formation, partly served as accumulators for the iron which has been leached out from the other sediments.

CHINESE NAMES OF PLANTS.

A preliminary list of the trees and shrubs of North Honan.

J. HERS.

The following list is based upon specimens collected in the Northern part of the Honan province, on both sides of the Yellow river, approximately between 34° and 36° lat. North.

The Chinese names given here have no pretention to Wen-li; they are just the common names in use among farmers, mountaineers and woodcutters; as these people are apt to forge a name whenever they do not know the true one, care has been taken to accept none of these appellations unless it had been obtained from four or five different sources.

In many instances, these common names have been found to be the same as those quoted in the Kiu Huang P'en Ts'ao (救荒本草), the Shuo Sung (說嵩) and other Chinese works. But when this help has failed, it has not always been an easy task to find characters giving as clear an interpretation of the sounds as heard from the natives, and they must therefore be taken with reserve. Such is the case for instance, with the "jang" used all over Honan for woody climbers, and the "kiang" used for several oaks and benzoin.

So far as botany is concerned, we are on much safer ground, as most of the specimens referred to were identified at the Arnold Arboretum; they could certainly not have been treated with more authority and I wish to express here my gratitude to the Directors of this Institution for the very kind support and advices received from them.

The two books above-mentioned offer a considerable interest to the student of Honan plants, for they were both written in Honan and based upon observations mostly made in the Mihsien district or in the region of the sacred Sung Shan; very little remains, in any of these places, of the wild flora, and one must now go farther West to find any remnants of the old forests. The only districts really worth visiting are those comprised between the Loho, on the

North, and the Fu Niu range, on the South, the latter forming the watershed between the Huangho and Yangtze basins; I would specially mention the northern slopes of the Lao Kiün Shan, which is the highest peak of the range (about 2,200 meters), fairly well wooded up to the summit. Farther West, near the Shensi border, the country is again denudated.

The species not observed in a wild state have been marked with an asterisk.

With a few exceptions, all specimens not yet fully identified have been left aside; they mostly belong to the willow, bamboo and prunus families.

| | | |
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| <i>Abelia Zanderi</i> , Rehd. | liu ch'ih mu | 六翅木 |
| " " | liu tao mu | 六道木 |
| <i>Acanthopanax Henryi</i> , Harms | | |
| <i>Acanthopanax spinosus</i> , Miquel | wu kia p'i | 五加皮 |
| <i>Acer cappadocicum</i> , Gleditsch | | |
| <i>Acer Davidii</i> , Franch. | ts'ing p'i tuan | 青皮櫟 |
| <i>Acer Franchetii</i> , Pax | ki chua tze | 鷄爪子 |
| <i>Acer Ginnala</i> , Maxim. | si sa yeh | 稀撒葉 |
| <i>Acer griseum</i> , Pax | t'ieh kiang | 鐵櫟 |
| " " | hung shih mu | 紅色木 |
| <i>Acer Henryi</i> , Pax | tang ho kuai | 擋河槐 |
| <i>Acer palmatum</i> , Thunb. | hung ki chua tze | 紅鷄爪子 |
| <i>Acer pictum</i> , Thunb., var. <i>par-viflorum</i> , Schneid. | ki chua tze | 鷄爪子 |
| <i>Acer pictum</i> , Thunb., var. <i>par-viflorum</i> , Schneid. | ya chua tze | 鴨爪子 |
| <i>Acer robustum</i> , Pax | hung shih mu | 紅色木 |
| <i>Acer tetramerum</i> , Pax | ts'ing p'i shu | 青皮樹 |
| <i>Acer species? nova</i> | ts'ing p'i tuan | 青皮櫟 |
| <i>Actinidia chinensis</i> , Planch. | yang t'ao | 羊桃 |
| <i>Actinidia purpurea</i> , Rehd. | lū mu jang | 綠木蓼 |
| * <i>Aesculus? chinensis</i> , Bunge | so lo shu | 杪櫟樹 |
| * <i>Ailanthus glandulosa</i> , Desfont. | ch'ow ch'uen | 臭椿 |
| <i>Akebialobata</i> , var. <i>australis</i> , Diels | su kua jang | 杵瓜蓼 |
| " " | lao lū tan | 老騾膽 |
| <i>Akebia quinata</i> , Decne | t'ung ts'ao | 通草 |
| <i>Alangium chinense</i> , Rehd. | erh chu hu lu | 二珠葫蘆 |
| | ni mu | 樅木 |
| <i>Albizzia julibrissin</i> , Durazz. | jung hua shu | 絨花樹 |
| " " | ho huan | 合歡 |
| <i>Albizzia kalkora</i> , Prain. | shan ho huan | 山合歡 |
| <i>Alchornea Davidii</i> , Franch. | shan ma kan | 山麻杆 |
| <i>Amelanchier asiatica</i> , Endl. | hung hsün tze | 紅枸子 |

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| <i>Ampelopsis aconitifolia</i> , Bunge. | yeh p'u t'ao | 野葡萄 |
| " " | ma p'u t'ao | 馬葡萄 |
| <i>Ampelopsis brevipedunculata</i> , var. <i>kulingensis</i> , Rehder | shan p'u t'ao | 山葡萄 |
| <i>Ampelopsis heterophylla</i> , Thunb. | shan p'u t'ao | 山葡萄 |
| <i>Ampelopsis humulifolia</i> , Bunge. | shan p'u t'ao | 山葡萄 |
| " " | niu p'u t'ao | 牛葡萄 |
| " " | mu ko jang | 木果囊 |
| <i>Andrachne capillipes</i> , Hutch. | | |
| <i>Andrachne hirsuta</i> , Hutch. | hei kow yeh | 黑枸櫞 |
| <i>Aralia chinensis</i> , var. <i>canescens</i> , Schneid. | tz'e ts'iu | 刺櫞 |
| <i>Aralia chinensis</i> , var. <i>glabrescens</i> , Schneid. | tz'e ts'iu | 刺櫞 |
| <i>Aristolochia</i> sp. | mu t'ung | 木通 |
| <i>Benzoin cercidifolium</i> , Rehd. | hung yeh kan kiang | 紅葉甘櫞 |
| <i>Benzoin citriodorum</i> , S. & Z. | | |
| <i>Benzoin fruticosum</i> , Rehd. | lü yeh kan kiang | 綠葉甘櫞 |
| <i>Benzoin glaucum</i> , S. & Z. | siang kuai yeh | 像槐葉 |
| <i>Benzoin umbellatum</i> , Rehd. | siao yeh kan kiang | 小葉甘櫞 |
| <i>Berberis circumserrata</i> , Maxim. | siao yeh huang pai | 小葉黃柏 |
| <i>Berberis dielsiana</i> , Fedde. | suan pu tsiang | 酸不蔣 |
| <i>Berberis Poirerii</i> , Schneid. | huang pai tze | 黃柏子 |
| <i>Berberis?</i> <i>Purdomii</i> , Schneid. | huang pai tze | 黃柏子 |
| <i>Berchemia Giraldiana</i> , Schneid. | niu pi kiüan | 牛鼻拳 |
| <i>Betula chinensis</i> , Maxim. | ch'uei yü | 垂榆 |
| <i>Betula japonica</i> , Sieb. var. <i>japonica</i> , Schneid. | pai hua shu | 白樺樹 |
| <i>Betula luminifera</i> , Winkl. | hung hua shu | 紅樺樹 |
| <i>Bignonia chinensis</i> , Lamarck | lung kio hua | 龍角花 |
| <i>Broussonetia Kaempferi</i> , Sieb. | nü kow | 女穀 |
| <i>Broussonetia papyrifera</i> , l'Hér. | k'u t'ao | 苦桃 |
| <i>Buckleya lanceolata</i> , Miq. | mi mien weng | 米麵蓊 |
| * <i>Buxus macrophylla</i> , var. <i>sinica</i> , Rehd. and Wils. | huang yang | 黃楊 |
| <i>Callicarpa Giraldiana</i> , Hesse | mi mi ch'ai | 蜜蜜柴 |
| <i>Callicarpa japonica</i> , Thunb. | yeh liu tze | 野子梢 |
| <i>Campylotropis macrocarpa</i> , Rehd. | hang tze sao | 統子梢 |
| <i>Caragana chamlagu</i> , Lam. | t'ieh sao chu | 鐵掃帚 |
| <i>Caragana</i> sp.? <i>nova</i> | yeh pien t'ow | 野扁豆 |
| <i>Carpinus cordata</i> , Bl. var. <i>sinensis</i> , Franch. | suei tze yü | 穗子榆 |

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|---|-------------------|------|
| <i>Carpinus Fargesiana</i> , Winkl. | ts'ien kin yü | 千金榆 |
| <i>Carpinus Henryana</i> , Winkl. | ,, ,, | 千金榆 |
| <i>Carpinus Seemaniana</i> , Diels | ,, ,, | 千金榆 |
| <i>Carpinus Turczaninowii</i> , var. ovalifolia, Winkl. | ,, ,, | 千金榆 |
| <i>Castanea mollissima</i> , Bl. | mao li | 毛栗 |
| * <i>Catalpa Bungei</i> , Meyer | kin sze ts'iu | 金絲楸 |
| <i>Catalpa Fargesii</i> , Bureau | huei ts'iu | 灰楸 |
| <i>Catalpa ovata</i> , G. Don | ho ts'iu | 河楸 |
| ,, ,, | hua ts'iu | 花楸 |
| * <i>Cedrela sinensis</i> , De Juss. | hiang ch'uen | 香椿 |
| <i>Celastrus angulatus</i> , Maxim. | k'u t'ung p'i | 苦通皮 |
| ,, ,, | k'u p'i shu | 苦皮樹 |
| ,, ,, | lo p'o yo | 蘿蔔藥 |
| <i>Celastrus hypoleuca</i> , Warb. | k'u t'ung p'i | 苦通皮 |
| <i>Celastrus loeseneri</i> , Rehd. and Wils. | kow lan yeh | 狗蘭葉 |
| <i>Celtis Biondii</i> , Pampan. | pai ma tze | 白麻子 |
| <i>Celtis Bungeana</i> , Bl. | pai ma tze | 白麻子 |
| ,, ,, | hei tan shu | 黑彈樹 |
| ,, ,, | pao ma shu | 報馬樹 |
| <i>Celtis koraiensis</i> , Nakai | pai ma tze | 白麻子 |
| ,, ,, | mu kua niang | 木瓜娘 |
| <i>Celtis labilis</i> , Schneid. | mu kua niang | 木瓜娘 |
| <i>Cephalotaxus drupacea</i> , var. sinensis, Rehd. and Wils. | yen pai | 崖柏 |
| <i>Cercis chinensis</i> , Bunge | wu sang | 烏桑 |
| ,, ,, | tze king | 紫荊 |
| * <i>Chaenomeles lagenaria</i> , Lindl. | mu kua hai t'ang | 木瓜海棠 |
| ,, ,, | t'ieh kiohait'ang | 木瓜海棠 |
| <i>Chaenomeles sinensis</i> , Koehne | mu kua | 木瓜 |
| <i>Chionanthus retusus</i> , Lindl. | niu kin tze | 牛筋子 |
| ,, ,, | wu kin tze | 烏金子 |
| * <i>Citrus trifoliata</i> , L. | t'ieh li ch'ai | 鐵籬柴 |
| <i>Cladrastus Wilsonii</i> , Takeda | shan king | 山荊 |
| <i>Clematis Gouriana</i> , Roxb. | kia kia jang | 佳佳囊 |
| ,, ,, | lao lü sü jang | 老驢鬚囊 |
| <i>Clematis grata</i> , var. grandidentata, Rehd. and Wils. | ma pei t'ow jang | 馬貝頭囊 |
| <i>Clematis pavoliniana</i> , Pampan. | shan ti fa jang | 山地法囊 |
| <i>Clerodendron foetidum</i> , Bunge | ch'ow mu tan | 臭牡丹 |
| <i>Clerodendron trichotomum</i> , var. Fargesii, Rehd. | ch'ow lao han | 臭老漢 |
| <i>Cornus Hemsleyana</i> , Wang. | hung liang tze | 紅涼子 |
| <i>Cornus kousa</i> , Buerger | liang tze | 涼子 |
| <i>Cornus macrophylla</i> , Wall. | liang tze | 涼子 |

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| <i>Cornus poliophylla</i> , Wang. | hei liang tze | 黑涼子 |
| <i>Cornus Walteri</i> , Wang. | liang tze | 涼子 |
| " " | sha liang | 沙涼 |
| " " | mao liang | 毛涼 |
| <i>Corylus heterophylla</i> , var. setchuensis, Franch. | chen tze | 榛子 |
| <i>Cotinus coggygia</i> , var. pubescens, Engl. | huang lo ts'ai | 黃蘆材 |
| <i>Cotoneaster acutifolia</i> , Turcz. | huei lü tuei | 灰驢腿 |
| <i>Cotoneaster acutifolia</i> , var. villosula, Rehd. and Wils. | siao yeh tz'e hsün tze. | 小葉刺枸 子 |
| <i>Cotoneaster multiflorum</i> , Bunge | huei hsün tze | 灰枸子 |
| " " | hiang li | 香李子 |
| " " | shui hsün tze | 水枸子 |
| <i>Cotoneaster racemiflora</i> , K. Koch, var. Veitchii, Rehd. and Wils. | mien siao | 棉消 |
| <i>Cotoneaster Zabelii</i> , Schneid. | huei hsün tze | 灰枸子 |
| " " | t'u hsün tze | 土枸子 |
| <i>Crataegus cuneata</i> , S. and Z. | siao yeh shan cha | 小葉山楂 |
| <i>Crataegus hupehensis</i> , Sarg. | shan cha | 山楂 |
| " " | mu hu li | 牧狐梨 |
| <i>Crataegus pinnatifida</i> , Bunge | shan li | 山梨 |
| <i>Cratesgus</i> sp. nova | pai hai t'ang | 白海棠 |
| <i>Cudrana tricuspidata</i> , Bureau | chih tze | 柘子 |
| " " | t'ieh ke chen | 鐵刺針 |
| * <i>Cunninghamia lanceolata</i> , Hooker | sha-sung | 杉松 |
| * <i>Cydonia oblonga</i> , Mill. | mu li | 木梨 |
| <i>Dalbergia hupeana</i> , Hance | huang t'an | 黃檀 |
| " " | shan kuai | 山槐 |
| " " | shan kin tze | 山荆子 |
| <i>Daphne genkwa</i> , S. and Z. | nao yü hua | 鬧魚花 |
| <i>Deutzia grandiflora</i> , Bunge | mi mi ts'ai | 蜜蜜材 |
| <i>Deutzia grandiflora</i> , Bunge, var. baroniana, Rehd. | mi mi ts'ai | 蜜蜜材 |
| <i>Deutzia grandiflora</i> , Bunge, var. baroniana, Rehd. | mi mi sao | 蜜蜜梢 |
| * <i>Diervilla florida</i> , S. and Z. var. | ch'uei sze hai t'ang | 垂絲海棠 |
| <i>Dioscorea acerifolia</i> , Diels | t'ung t'iao jang | 銅條囊 |
| * <i>Diospyros kaki</i> , L. | shih tze | 柿子 |
| <i>Diospyros lotus</i> , L. | hei tsao | 黑棗 |
| " " | juan tsao | 軟棗 |
| * <i>Edgeworthiachrysantha</i> , Lindl. | tan ch'uen | 探春 |
| <i>Ehretia acuminata</i> , R. Brown | ta pai lien | 大白蓮 |

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| <i>Ehretia macrophylla</i> , Wall. | Pai lien ch'a | 白蓮茶 |
| * <i>Elaeagnus angustifolia</i> , L. | kuei hiang liu | 桂香柳 |
| <i>Elaeagnus lanceolata</i> , Warb. | kien tze kuo | 剪子果 |
| <i>Elaeagnus multiflora</i> , Thunb. | kien tze kuo | 剪子果 |
| " " | t'ien tsao | 甜棗 |
| <i>Elaeagnus umbellata</i> , Thunb. | kien tze kuo | 剪子果 |
| " " | t'ien tsao | 甜棗 |
| <i>Elsholtzia stauntonii</i> , Benth. | kin kieh | 金芥 |
| * <i>Ephedra</i> sp. | ma huang | 馬黃 |
| * <i>Eucommia ulmoides</i> , Oliv. | mien mu | 棉木 |
| " " | tu chung | 杜仲 |
| <i>Euptelea Franchetii</i> , Van Tiegh. | ho ma tze | 河蕨子 |
| " " | lin ch'uen mu | 領春木 |
| " " | shui t'ao | 水桃 |
| " " | cheng sin mu | 正心木 |
| <i>Euodia Henryi</i> , Dode | wu pei tze | 烏倍子 |
| <i>Euodia hupehensis</i> , Dode | hei la tze | 黑辣子 |
| <i>Euonymus alata</i> , var. <i>aperta</i> , Loes. | yün yang | 芸楊 |
| <i>Euonymus alata</i> , var. <i>aperta</i> , Loes. | kuei kien ch'ow | 鬼見愁 |
| <i>Euonymus Bungeana</i> , Maxim. | ming kai yeh ho | 明開夜合 |
| <i>Euonymus cornuta</i> , Hemsl. | wu kia feng | 五茄楓 |
| <i>Euonymus elegantissima</i> , Loes. and Rehd. | kin sze tiao hu tieh | 金絲吊蝴蝶 |
| <i>Euonymus Giraldii</i> , Loes. | kin sze tiao hu tieh | 金絲吊蝴蝶 |
| <i>Euonymus lanceifolia</i> , Loes. | kuei kieh ch'ow | 鬼見愁 |
| <i>Euonymus microcarpa</i> , Sprague | tung ts'ing | 冬青 |
| <i>Euonymus patens</i> , Rehd. | tung ts'ing | 冬青 |
| " " | pa shan hu | 趴山虎 |
| <i>Euonymus japonica</i> , Miquel, var. <i>acuminata</i> , Rehder | pa shan hu | 趴山虎 |
| <i>Euonymus japonica</i> , Miquel, var. <i>radicans</i> , Regel | pa shan hu | 趴山虎 |
| <i>Euonymus sanguinea</i> , var. <i>bre- vipedunculata</i> , Loes. | shan mi tsan | 山密參 |
| * <i>Ficus carica</i> , L. | wu hua kuo | 無花果 |
| <i>Ficus heteromorpha</i> , Hemsl. | tze kow yeh | 紫狗葉 |
| <i>Fontanesia Fortunei</i> , Carr. | pai king mu | 白荆木 |
| <i>Fontanesia phyllireoides</i> , La- bill. | | |
| <i>Forsythia suspensa</i> , Vahl. | huang hua kan | 黃花杆 |
| " " | lien kiao | 連翹 |
| <i>Fraxinus Bungeana</i> , D. C. | siao yeh pai la | 小葉白蠟 |
| <i>Fraxinus chinensis</i> , Roxb. | pai la | 白蠟 |

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| <i>Fraxinus chinensis</i> , var. <i>acuminata</i> , Lingelsh. | pai la | 白 蠟 |
| <i>Fraxinus chinensis</i> , var. <i>rhynchophylla</i> , Hemsl. | pai la | 白 蠟 |
| * <i>Ginkgo biloba</i> , L. | pai kuo | 白 果 |
| <i>Gleditsia heterophylla</i> , Bunge | shan tsao kio | 山 皂 角 |
| * <i>Gleditsia sinensis</i> , Lam. | tsao kio | 皂 角 |
| <i>Grewia parviflora</i> , Bunge | t'ow pan t'ow | 頭 半 頭 |
| " " | k'e mei | 挖 櫟 |
| " " | kow ning meng | 狗 檸 檬 |
| <i>Helwingia sinensis</i> , Batal. | yeh ch'ang hua | 葉 長 花 |
| <i>Helwingia japonica</i> , Dietr. | ta yeh t'ung s'ao | 大 葉 通 草 |
| <i>Heterosmilax Gaudichaudiana</i> , Maxim. | shan cha | 山 槿 |
| <i>Hemiptelea Davidii</i> , Planch. | tz'e yü | 刺 榆 |
| * <i>Hibiscus, syriacus</i> , L. | mu kin | 木 槿 |
| <i>Hovenia dulcis</i> , Thunb. | kuai ts'ao | 拐 棗 |
| " " | t'ien pan yeh | 甜 半 夜 |
| <i>Hydrangea longipes</i> , Franch. | shui t'ung ts'ao | 水 通 草 |
| * <i>Hypericum chinense</i> , L. | kin sze hai t'ang | 金 絲 海 棠 |
| <i>Idesia polycarpa</i> , Maxim. var. <i>vestata</i> , Diels | shui t'ung | 水 通 |
| <i>Indigofera ichangensis</i> , Craib | shan t'ow ken | 山 頭 根 |
| <i>Indigofera Kirilowii</i> , Maxim. | pai hang tze sao | 白 簍 子 梢 |
| <i>Indigofera potaninii</i> , Craib | hang tze sao | 簍 子 梢 |
| * <i>Jasminum floridum</i> , Bunge | ying hia | 迎 夏 |
| " " | ch'ang ch'uen | 長 春 |
| <i>Jasminum nudiflorum</i> , Lindl. | ying ch'uen | 迎 春 |
| * <i>Juglans regia</i> , L. | he t'ao | 核 桃 |
| <i>Juglans</i> sp. | shan he t'ao | 山 核 桃 |
| * <i>Juniperus chinensis</i> , L. | tz'e pai | 刺 柏 |
| " " | tz'e sung | 刺 松 |
| * <i>Juniperus chinensis variegata</i> | ts'uei pai | 翠 柏 |
| * <i>Juniperus formosana</i> , Hayata | yin lo sung | 銀 落 松 |
| <i>Kalopanax ricinifolius</i> , Miquel | tz'e ts'iu | 刺 楸 |
| <i>Kerria japonica</i> , D. C. | t'ung ts'ao | 通 草 |
| " " | huang yü yeh mei | 黃 榆 葉 梅 |
| <i>Koelreuteria paniculata</i> , Laxmann | mu lan ya | 木 蘭 芽 |
| <i>Koelreuteria paniculata</i> , | hei yeh shu | 黑 葉 樹 |
| * <i>Lagerstroemis indica</i> , L. | pai jih hung | 百 日 紅 |
| " " | tze wei | 紫 薇 |
| <i>Lespedeza bicolor</i> , Turcz. | hang tze sao | 簍 子 梢 |
| <i>Lespedeza Buergeri</i> , Miq. | shih hiang hua | 石 香 花 |
| " " | shih ku sao | 石 苦 梢 |

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| <i>Lespedeza cyrtobotrya</i> , Miq. | hang tze sao | 箠子梢 |
| <i>Lespedeza floribunda</i> , Bunge | kia pu tsi | 洼不齊 |
| <i>Lespedeza formosa</i> , Koehne | hang tze sao | 箠子梢 |
| <i>Lespedeza trichocarpa</i> , Pers. | kia pu tsi | 洼不齊 |
| <i>Ligustrum acutissimum</i> , Koehne | tung ts'ing | 冬青 |
| * <i>Ligustrum Quihoui</i> , Carr. | tung ts'ing | 冬青 |
| <i>Litsea pungens</i> , Hemsl. | shih tso | 石作 |
| <i>Lonicera Ferdinandi</i> , var. <i>leycesterioides</i> , Zabel | | |
| <i>Lonicera fragrantissima</i> , Carr. | lo t'o pu tai | 駱駝布袋 |
| <i>Lonicera japonica</i> , Thunb. | kin yin hua | 金銀花 |
| <i>Lonicera Maackii</i> , Maxim. | kow tsi ku | 狗集穀 |
| <i>Lonicera Maackii</i> , Maxim., var. <i>podocarpa</i> , Franch. | kow tsi ku | 狗集穀 |
| <i>Lonicera Maackii</i> , Maxim., var. <i>podocarpa</i> , Franch. | kow kow mu | 狗狗木 |
| <i>Lonicera Standishii</i> , Carr. | lo t'o pu tai | 駱駝布袋 |
| <i>Lonicera tragophylla</i> , Hemsl. | yeh ch'ang hua | 葉長花 |
| <i>Lycium chinense</i> , Miller | kow k'i | 枸杞 |
| <i>Magnolia aulacosperma</i> , Rehd. and Wils. | wang ch'uen hua | 望春花 |
| <i>Magnolia denudata</i> , Desrous. | wang ch'uen hua | 望春花 |
| " " | pai yü lan | 白玉蘭 |
| " " | sin i | 辛夷 |
| * <i>Magnolia liliflora</i> , Desrous. | tze yü lan | 紫玉蘭 |
| <i>Mahonia Bealii</i> , Takeda | ta yeh huang pai | 大葉黃柏 |
| <i>Mahonia Fargesii</i> , Takeda | ta yeh huang pai | 大葉黃柏 |
| <i>Malus honanensis</i> , Rehd.sp. nova | ta yeh mao cha | 大葉毛櫨 |
| <i>Malus spectabilis</i> , Borkh. | hai t'ang | 海棠 |
| <i>Malus theifera</i> , Rehd. | yeh hai t'ang | 野海棠 |
| <i>Melia azederach</i> , L. | lien shu | 棟樹 |
| <i>Meliosma cuneifolia</i> , Fr. | lung sü mu | 龍鬚木 |
| <i>Meliosma Veitchiorum</i> , Hemsl. | nuan mu | 暖木 |
| * <i>Meratia praecox</i> , Rehd. & Wils. | la mei | 臘梅 |
| * <i>Meratia praecox</i> , var. <i>grandiflora</i> , Rehd. and Wils. | la mei | 臘梅 |
| <i>Morus acidosa</i> , Griff. | siao yeh sang | 小葉桑 |
| <i>Morus alba</i> , L. | sang shu | 桑樹 |
| <i>Morus alba</i> , var. <i>laciniata</i> , Beiss | hua yeh sang | 花葉桑 |
| * <i>Nandina domestica</i> , Thunb. | t'ien chu | 天竹 |
| * <i>Osmanthus fragrans</i> , Lour. | kuei hua | 桂花 |
| <i>Ostrya japonica</i> , Sarg. | miao yü | 苗榆 |
| <i>Ostryopsis davidiana</i> , Decne | leng yü | 梭榆 |
| ²⁵ <i>Paeonia suffruticosa</i> , Andrews | mu tan | 牡丹 |

²⁵ Wild mutan is still found in some parts of the Yungning district.

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| Paliurus sp. | suan tsao | 酸 棗 |
| Parthenocissus tricuspidata, Planch. | pa shan hu | 趴 山 虎 |
| *Paulownia Duclouxii, Dode | tze tung | 紫 桐 |
| Paulownia tomentosa, K. Kock | pao tung | 抱 桐 |
| Periploca sepium, Bunge | yang kio jang | 羊 角 囊 |
| Philadelphus incanus, Koehne | mi mi ts'ai | 蜜 蜜 材 |
| Philadelphus pekinensis, Rup. | lao mi kan | 老 蜜 柯 |
| var. dasycalix, Rehd var. nova | | |
| Philadelphus subcanus, Koehne | mi mi ts'ai | 蜜 蜜 材 |
| Picrasma quassioides, Bennet | k'u t'an mu | 蜜 苦 檀 木 |
| " " | k'u lien | 苦 楝 |
| Pinus Armandii, Franch | yu sung | 油 松 |
| " " | wu chen sung | 五 針 松 |
| " " | pai sung | 白 針 松 |
| Pinus Bungeana, Zucc. | san chen sung | 三 針 松 |
| " " | pai kuo sung | 白 骨 松 |
| " " | pai p'i sung | 白 皮 松 |
| Pinus sinensis, Lambert | hei sung | 黑 松 |
| " " | chu p'i sung | 豬 皮 松 |
| " " | ma wei sung | 馬 尾 松 |
| *Pistacia chinensis, Bunge | huang lien | 黃 楝 |
| Platycarya strobilacea, S. and Z. | kuan siang | 還 香 |
| " " | feng yang t'ow | 鳳 陽 頭 |
| Polygonum cuspidatum, S. and Z. | hua lü tuei | 花 驢 腿 |
| Polygonum multiflorum, Maxim | suan k'i k'i | 酸 杞 杞 |
| Populus adenopoda, Maxim. | ming yang | 明 楊 |
| Populus Simonii, Carr. | ts'ing yang | 青 楊 |
| " " | siao yeh yang | 小 葉 楊 |
| *Populus suaveolens, Fisch. | " " " | 小 葉 楊 |
| " " | ts'ai yang | 菜 楊 |
| *Populus tomentosa, Carr. | ta yeh yang | 大 葉 楊 |
| Populus tremula, var. davidiana, Schn. | shan yang | 山 楊 |
| Populus sp. | k'u yang | 苦 楊 |
| Prinsepia uniflora, Batal. | mai li eul | 麥 李 兒 |
| Prunus armeniaca, L. | shan hing | 山 杏 |
| Prunus Davidiana, Franch. | shan t'ao | 山 桃 |
| Prunus? humilis, Bunge | niu li | 牛 李 |
| Prunus mume, S. and Z. | heng | 杏 桃 |
| Prunus persica, Stokes | t'ao | 桃 |
| Prunus pseudocerasus, Lindl. | ying t'ao | 櫻 桃 |
| Prunus salicina, Lindl. | k'u li | 苦 李 |
| " " | kow li | 狗 李 |
| Prunus Serrulata, var. pubescens, Wils. | | |

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| <i>Prunus tomentosa</i> , Thunb. | shan ying t'ao | 山櫻桃 |
| * <i>Prunus triloba</i> , Lindl. | yeh ying t'ao | 野櫻桃 |
| ” ” | yü yeh mei | 榆葉梅 |
| <i>Pterocarya hupehensis</i> , Skan | hua yang | 花楊 |
| ” ” | shan he t'ao | 山刻桃 |
| <i>Pterocarya paliurus</i> , Batal. | | |
| <i>Pterocarya stenoptera</i> , D. C. | kuei liu | 鬼柳 |
| <i>Pteroceltis Tatarinowii</i> , Maxim. | ts'ing t'an | 青檀 |
| <i>Pueraria hirsuta</i> , Schneid. | ko t'iao | 葛條 |
| * <i>Punica granatum</i> , L. | shih liu | 石榴 |
| <i>Pyrus betulaefolia</i> , Bunge | t'ang li | 棠梨 |
| <i>Pyrus Calleryana</i> , Decne | t'ang li | 棠梨 |
| <i>Pyrus serotina</i> , var. <i>culta</i> , Rehd. | t'ang li | 棠梨 |
| <i>Quercus aliena</i> , Bl. | niu shih t'ow | 牛舌頭 |
| ” ” | ts'ing kang | 青岡 |
| <i>Quercus aliena</i> , Bl. var. <i>acute-serrata</i> , Maxim. | ts'ing kang | 青岡 |
| <i>Quercus Baronii</i> , Skan | kiang tze shu | 樞子樹 |
| <i>Quercus dentata</i> , Thunb. | hu li | 櫟 |
| <i>Quercus glandulifera</i> , Bl. | ts'ing kang | 青岡 |
| <i>Quercus liaotungensis</i> , Koidz. | siao yeh ts'ing kang | 小葉青岡 |
| <i>Quercus serrata</i> , Thunb. | lao huang li | 老黃櫟 |
| <i>Quercus spathulata</i> , Seemen | ts'ing kiang tze | 青櫟子 |
| <i>Quercus variabilis</i> , Bl. | hua li | 花櫟 |
| ” ” | lao li | 老櫟 |
| <i>Rhamnella obovalis</i> , Schneid. | juan yeh | 鞣葉 |
| <i>Rhamnus argutus</i> , Maxim. | chao kia ch'a | 照家茶 |
| ” ” | ch'ih mu | 赤木 |
| <i>Rhamnus chlorophorus</i> , Decne | | |
| <i>Rhamnus leptophyllus</i> , Schneid. | pai shih mu | 白色木 |
| <i>Rhamnus Meyeri</i> , Schneid. | hei cha ke chen | 黑扎刺針 |
| <i>Rhamnus parvifolius</i> , Bunge | kin p'i | 金皮 |
| <i>Rhamnus rugulosus</i> , Hemsl. | yu hu lu tze | 油葫蘆子 |
| <i>Rhamnus utilis</i> , Decne | yu hu lu tze | 油葫蘆子 |
| <i>Rhamnus</i> sp. ? <i>nova</i> | ta lü p'i | 大綠皮 |
| <i>Rhododendron</i> Augstenii, Hemsl. | ch'a hua | 茶花 |
| <i>Rhododendron micranthum</i> , Turcz. | chao shan hung | 照山紅 |
| <i>Rhododendron micranthum</i> , Turcz. | wan kin hua | 萬金花 |
| <i>Rhododendron mucronulatum</i> , Turcz. | | |
| <i>Rhododendron Simsii</i> , Planch. | chao shan hung | 照山紅 |
| <i>Rhodotypos kerrioides</i> , S. and Z. | shui hu lu kan | 水葫蘆杆 |

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| <i>Rhus javanica</i> , L. | lin pu su | 淋 樸 楸 |
| <i>Rhus potaninii</i> , Maxim. | wu pei tze | 烏 倍 子 |
| <i>Rhus verniciflua</i> , Stokes | ts'i shu | 漆 樹 |
| <i>Ribes alpestre</i> , Decne | tz'e li | 刺 李 |
| <i>Ribes burejense</i> , Fr. Schmidt | tz'e li | 刺 李 |
| * <i>Rosa Banksiae</i> , Aiton | mu siang | 木 香 |
| <i>Rosa banksiopsis</i> , Baker | yeh tz'e mei | 野 刺 玫 |
| | tz'e mu kiü | 刺 木 菊 |
| * <i>Rosa chinensis</i> , Jacq. | yüeh ki | 月 季 |
| <i>Rosa multiflora</i> , var. <i>cathayensis</i> , Rehd. and Wils. | ts'iangts'iangtze | 薔 薔 子 |
| <i>Rosa rugosa</i> , Thunb. | mei kuei | 玫 瑰 |
| <i>Rosa Sweginzowii</i> , Koehne | ts'iang wei | 薔 薇 |
| * <i>Rosa xanthina</i> , Lindl. | huang tz'e mei | 黃 刺 玫 |
| <i>Rosa xanthina</i> , forma <i>normalis</i> , Rehd. and Wils. | ma jih jih | 馬 熱 熱 |
| <i>Rubus flosculosus</i> , Focke | p'o pan jang | 坡 平 蕤 |
| <i>Rubus mesogaeus</i> , Focke | p'o pan jang | 坡 平 蕤 |
| <i>Rubus triphyllus</i> , Thunb. | p'o pan jang | 坡 平 蕤 |
| <i>Sabia puberula</i> , Rehd. and Wils. | ts'ing shih t'iao | 青 蛇 條 |
| <i>Sageretia pyncophylla</i> , Schneid. | tuei kieh tze | 對 結 子 |
| | tuei kieh mu | 對 結 木 |
| <i>Sageretia subcaudata</i> , Schneid. | tuei kieh tze | 對 結 子 |
| <i>Salix babylonica</i> , L. | tao tsai liu | 倒 栽 柳 |
| <i>Salix Matsudana</i> , Koidzumi | liu | 柳 |
| <i>Salix purpurea</i> , L. var. <i>multi-</i> <i>nerva</i> , Matsum. | pai ki liu | 白 箕 柳 |
| <i>Salix Wallichiana</i> , Anders. | kuei liu | 鬼 柳 |
| * <i>Salix Wilsonii</i> , Seemen | kuei liu | 鬼 柳 |
| <i>Sambucus racemosa</i> , L. | lan kieh po | 藍 篩 朴 |
| <i>Sambucus Sieboldiana</i> , Bl. | lan kieh po | 藍 篩 朴 |
| <i>Sapium sebiferum</i> , Roxb. | tsiu tsiu mu | 白 白 木 |
| <i>Schizandra sphenanthera</i> , Rehd. and Wils. | wu wei tze | 五 味 子 |
| | liao wei | 了 味 |
| <i>Smilax discotis</i> , Wash. | la tuan kin | 拉 斷 筋 |
| " " | tao la niu | 倒 拉 牛 |
| <i>Smilax discotis</i> , var. <i>concolor</i> , Nors. | la tuan kin | 拉 斷 筋 |
| <i>Smilax longipes</i> , Warb. | la tuan kin | 拉 斷 筋 |
| <i>Smilax scobinicaulis</i> , Wright | la tuan kin | 拉 斷 筋 |
| <i>Smilax vaginata</i> , Decne | tao la niu | 倒 拉 牛 |
| ²⁶ <i>Sophora japonica</i> , L. | kuai shu | 槐 樹 |

²⁶ Three forms of *sophora* are known in Honan, as well as all over North China, the white, the black and the green.

| | | |
|--|-------------------|------|
| * <i>Sophora japonica</i> , var. <i>pendula</i> , Loudon | lung chao kuai | 龍爪槐 |
| <i>Sophora viciifolia</i> , Hance | ma ti chen | 馬蹄針 |
| <i>Sorbaria arborea</i> , Schneid. var. <i>glabrata</i> , Rehd. | chen chu mei | 珍珠梅 |
| <i>Sorbaria sorbifolia</i> , A. Braun | liu yüeh hsüeh | 六月雪 |
| " " | yeh kao liang | 野高粱 |
| <i>Sorbus alnifolia</i> , K. Koch | shui yü | 水榆 |
| " " | huang shan yü | |
| <i>Sorbus Folgneri</i> , Rehd. | mao hsün tze | 毛枸子 |
| <i>Sorbus hupehensis</i> , Schneid. | | |
| <i>Sorbus Koehneana</i> , Schneid. | wei sin kuai | 未心槐 |
| <i>Sorbus theifera</i> , Rehd. | huei hsün tze | 灰枸子 |
| <i>Spiraea cantoniensis</i> , Lour. | shih pang tze | 石棒子 |
| <i>Spiraea media</i> , Schmidt | shih pang tze | 石棒子 |
| <i>Spiraea media</i> , var. <i>sericea</i> Regel | shih pang tze | 石棒子 |
| <i>Spiraea pubescens</i> , Turcz. | shih pang tze | 石棒子 |
| <i>Spiraea triloba</i> , L. | shih pang tze | 石棒子 |
| <i>Stachyurus chinensis</i> , Franch. | t'ung ts'ao | 通草 |
| <i>Staphylea holocarpa</i> , Hemsl. | shui liang tze | 水涼子 |
| <i>Styrax Hemsleyanus</i> , Diels | lao wa ling | 老鴉鈴 |
| <i>Symplocos paniculata</i> , Wall. | fan kua yeh | 播瓜葉 |
| " " | jan yeh | 染葉 |
| * <i>Syringa affinis</i> , Henry | pai ting siang | 白丁香 |
| * <i>Syringa Meyeri</i> , Schneid. | nan ting siang | 南丁香 |
| <i>Syringa microphylla</i> , Diels | yeh ting siang | 野丁香 |
| * <i>Syringa oblata</i> , Lindl. | tze ting siang | 紫丁香 |
| <i>Syringa pekinensis</i> , Rupr. | ho hua | 荷花 |
| * <i>Syringa persica</i> , var. <i>laciniata</i> , Vahl. | hua yeh tingsiang | 花葉丁香 |
| <i>Syringa pubescens</i> , Turcz. | siaoyeh tingsiang | 小葉丁香 |
| <i>Tamarix chinensis</i> , Lour. | hung kin t'iao | 紅筋條 |
| * <i>Thuja orientalis</i> , L. | pai shu | 柏樹 |
| <i>Tilia dictyoneura</i> , Engler | heng yeh tuan | 杏葉楸 |
| <i>Tilia Henryana</i> , Szys. | tuan shu | 楸樹 |
| <i>Tilia laetevirens</i> , Rehd. and Wils. | tuan shu | 楸樹 |
| <i>Tilia mandshurica</i> , Rupr. and Maxim. | siao yeh tuan | 小葉楸 |
| <i>Tilia Oliveri</i> , Szys. | tuan shu | 機樹 |
| <i>Tilia tuan</i> , Szys. | tuan shu | 機樹 |
| <i>Trachelospermum jasminoides</i> , Lem. | pa shan hu | 趴山虎 |
| * <i>Trachycarpus excelsa</i> , Wednl. | tsung shu | 櫻樹 |
| <i>Ulmus Davidiana</i> , Planch. | shan mao yü | 山毛楸 |
| <i>Ulmus japonica</i> , Sarg. | shan yü | 山楸 |

| | | | |
|--|-----------------|---|-----|
| <i>Ulmus japonica</i> , Sarg. | ang yü | 柳 | 榆 |
| <i>Ulmus macrocarpa</i> , Hance | shan yü | 山 | 榆 |
| " " " | pien yü | 扁 | 榆 |
| <i>Ulmus parvifolia</i> , Jaquin | sien yü | | |
| " " " | tiao p'i yü | 掉 | 皮 榆 |
| <i>Ulmus pumila</i> , L. | yü shu | 榆 | 樹 |
| <i>Ulmus Wilsoniana</i> , Schneid. | ang yü | 柳 | 榆 |
| | mao yü | 毛 | 榆 |
| <i>Viburnum dilatatum</i> , Thunb. | t'u luan t'iao | 土 | 藥 條 |
| * <i>Viburnum fragrans</i> , Bunge | tan ch'uen | 丹 | 春 |
| <i>Viburnum lobophyllum</i> , Graeb- ner | yü wo sze | 玉 | 窩 絲 |
| " " " | yo sze t'iao | 藥 | 絲 條 |
| " " " | hua sze t'iao | 花 | 絲 條 |
| <i>Viburnum shensianum</i> , Maxim. | t'u luan t'iao | 土 | 藥 條 |
| " " " | tung lan t'iao | 冬 | 蘭 條 |
| <i>Viscum album</i> , L. | ki sheng ts'ao | 杞 | 生 草 |
| <i>Vitex negundo</i> , L. var. <i>incisa</i> , Clarke | king sao | 荆 | 梢 |
| | shan king t'iao | 山 | 荆 條 |
| <i>Vitis pentagona</i> , Diels and Gilg. | yeh p'u t'ao | 野 | 葡 萄 |
| " " " | mao p'u t'ao | 毛 | 葡 萄 |
| <i>Vitis Piasezkii</i> , Maxim. | sia p'u t'ao | 夏 | 葡 萄 |
| " " " | tz'e p'u t'ao | 紫 | 葡 萄 |
| <i>Vitis Romanetii</i> , Caill. | yeh p'u t'ao | 野 | 葡 萄 |
| " " " | ts'iu p'u t'ao | 秋 | 葡 萄 |
| <i>Vitis Thunbergii</i> , S. and Z. | yeh p'u t'ao | 野 | 葡 萄 |
| <i>Wikstroemia chamaedaphne</i> , Meis. | yang yen hua | 痒 | 眼 花 |
| <i>Wistaria chinensis</i> , D.C. | ko hua | 葛 | 花 |
| * <i>Xanthoceros sorbifolia</i> , Bunge | wen kuan shu | 文 | 冠 樹 |
| <i>Zanthoxylum alatum</i> , Roxb. | yeh hua tsiao | 野 | 花 椒 |
| * <i>Zanthoxylum Bungei</i> , Planch. | hua tsiao | 花 | 椒 |
| <i>Zanthoxylum setosum</i> , Hemsl. | kow tsiao | 狗 | 椒 |
| <i>Zelkova sinica</i> , Schneid. | pao yü | 抱 | 榆 |
| " " " | huang yü | 黃 | 榆 |
| * <i>Zizyphus sativa</i> , Gaertn. | tsao shu | 棗 | 樹 |
| <i>Zizyphus sativa</i> , var. <i>spinosa</i> , Bunge | suan tsao | 酸 | 棗 |
| * <i>Zizyphus sativa</i> , forma <i>tortuosa</i> | lung chao tsao | 龍 | 爪 棗 |

ORIBATOIDEA SINENSIS I

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Under the above title the writer purposes to report, from time to time, what he is able to find on this subject. As far as he knows, nothing has yet been reported on this group of Acarina from China proper.

The generic name *Oribata* originated with the French entomologist Pierre André Latreille when in 1802, in his "*Histoire Naturelle, Générale et Particulière des Crustacés et des Insectes*," Vol. 3, p. 65, he coined this term (as explained by him in the "*Nouveau Dictionnaire d'Histoire Naturelle*," Vol. 16 (1803), pp. 349 and 350) for the distinguishment of all those acarians which are now placed in the family Oribatidae (sensu lato), establishing as type *Acarus geniculatus* Linné. Two years later (1804) Frédéric-Louis Hammer published the "*Mémoire Aptérologique*" of Jean-Frédéric Hermann (finished and edited by his father Paul Hermann because of the early death of his son). Herein Hermann formed the new generic name *Notaspis* for those types of acarians which are now placed in the family Oribatidae. Thus *Notaspis* is a synonym of *Oribata*.

No new generic names for this group of arachnids appeared until 1826 when Heyden in Vol. 18, p. 608 of Oken's "*Isis*," wrote his "*Versuch einer systematischen Eintheilung der Acariden*" in which he makes a detailed subdivision of the acarians, applying generic names to each of the subdivisions and appointing a type for each. From this work I translate as follows:

FAMILY ACARIDES.

Legion I. With eight legs adapted for running.

Phalanx 2. Without eyes.

Section 2. Mouth parts on the under side of the body.

Division 5. Head and thorax grown together.

b. All feet provided with club-shaped joints.

45. Genus, *Oribata* Latr. (*Notaspis* Herm.)

Type, *Oribata geniculata* Latr.

Division 6. Head and thorax grown together with rest of body.

Subdivision 2. Without visible antennae (feelers).

e. All feet with 3-partite claws.

57. Genus, *Galumna* nob.

Type, *Notaspis alatus* Herm.

Even a cursory consideration of the descriptions and figures of *Oribata geniculata* (Linné) and *Notaspis alatus* Herm, shows that the former belongs to the genus later called *Damaeus* by Koch, Nicolet and Michael, while the latter is unmistakably a member of that group for which Oudemans uses the generic name *Galumna* (*id est sensu restricto*).

The following species of this genus were collected during the summer of 1921 at a former temple grounds (Ch'ao Yang An) situated at the edge of the hills southwest of Peking. The species have been arranged in alphabetical order. Under measurements, the minimum, the average (in parentheses) and the maximum dimensions are given. All measurements are in microns unless otherwise indicated.

GALUMNA ALTERA OUDMS. 1915.

Seven specimens of this species were taken on September 17th from the under surface of stones in the small, sheltered fields of the temple grounds.

They are identical to those described and figured by Oudemans in his article "*Notizen über Acari, 26 Reihe*" which was published in 1919 in the "*Archiv für Naturgeschichte*" 83. Jahrgang 1917, Abteilung A, Heft 4, pp. 1-84, except that the total length averages 510 and the length of the notogaster averages 425. This dwarfing may be due to the stringent biological conditions of northeast China. For a group of animals accustomed to feed on the vegetable mould of a forest floor and in the midst of moisture, the species of this region find themselves in a semi-arid environment until mid-June or July and one utterly lacking in vegetable mould of any kind.

Oudemans material is from "San Remo," northwestern Italy.

GALUMNA LANCEATUS OUDMS. 1900.

Under this name are temporarily referred five specimens taken on the same date as the above from the under surface of stones lying in a shaded ravine, also a single specimen

taken the next day from a coating of fine moss at the foot of a northerly exposed brick wall.

They differ from the description and drawing of Oudemans (*loco citato*), in having a slightly longer and more slender pseudostigmatic organ whose head is more elongate and slender and drawn out to a fine and bristle-like point, in having a pore posterior to the shorter areae porosae adalares and another between the pore mesial to these areae porosae and the large mesial pore, and other minor details. The average length of our specimens is 629.

Distribution.—England, Netherlands, Italy and probably North China.

GALUMNA OBVIUS SINENSIS SSP. N.

Diagnosis.—Specific: Body large, 8 mm. long, high, dark and opaque; frons vertical; pseudostigmatic organs medium long, somewhat rigid, slender and slightly fusiform; interlamellar hairs very short and inconspicuous; cephalothoracic bristle formula: pst. o. 1, il. h. 4, l. h. 2, r. h. 3; anterior edge of notogaster distinct; pteromorph groove wide, strongly accentuated by thickened side, with a pore anterior to it; pteromorph nervures rather numerous, linear, crenelate.

Subspecific: Pseudostigmatic organs slender but clavi-form, gently sinuate distally, roughened about the distal end by spine- or thorn-like protuberances, size smaller, .7 mm. long.

Dimensions.—(Twelve specimens measured).

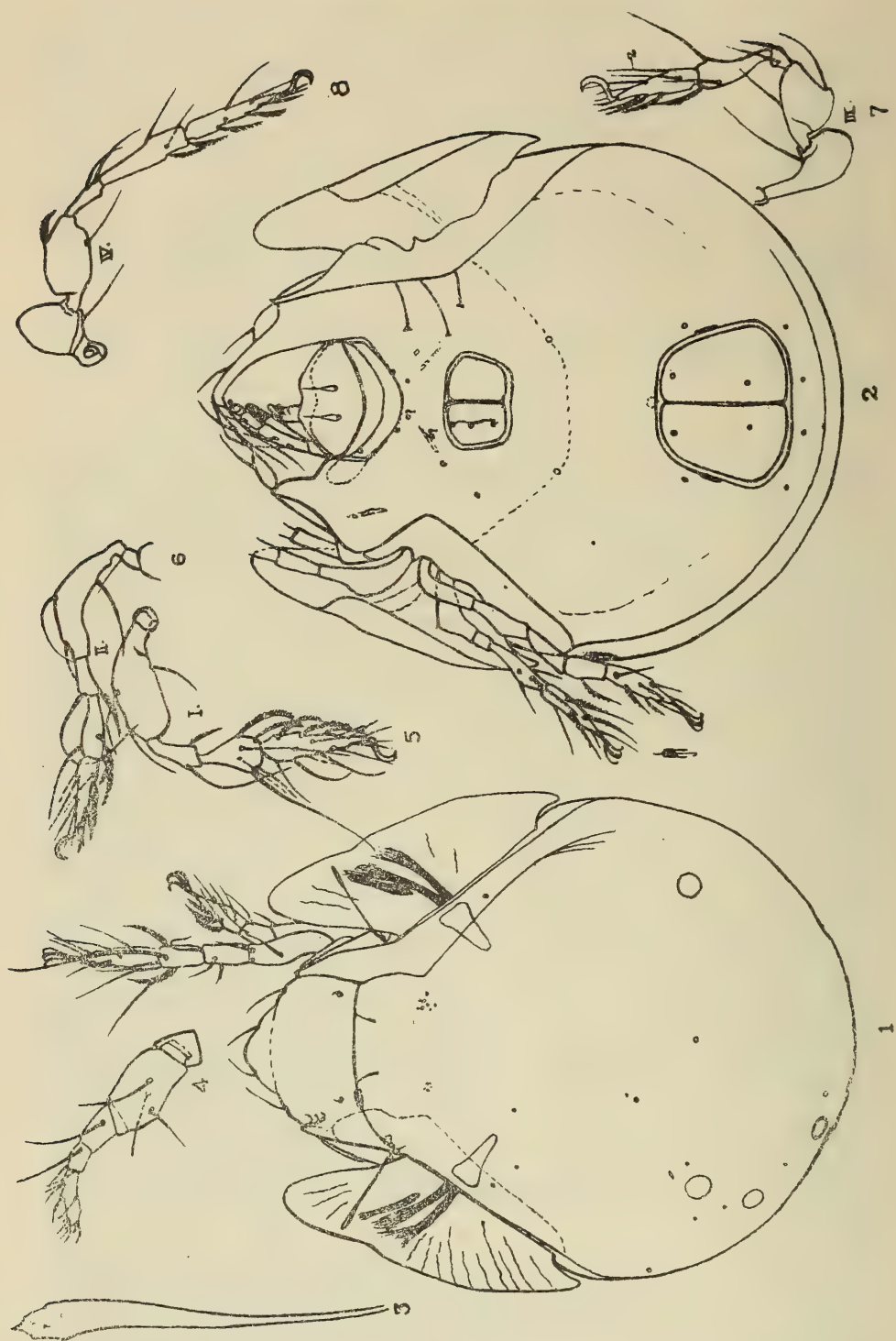
| | | | | |
|--|-----|-----|-----|-------------|
| Total length of body | ... | ... | ... | 672(702)747 |
| Length of notogastral plate | ... | ... | ... | 560(564)595 |
| Breadth of notogastral plate | ... | ... | ... | 510(511)544 |
| Length of pteromorphae | ... | ... | ... | 332(350)353 |
| Distance between interlamellar hairs | ... | ... | ... | 122(136)151 |
| Length of ventral plate along median line | ... | ... | ... | 484(500)527 |
| Length of camerostome | ... | ... | ... | 129(135)144 |
| Breadth of camerostome | ... | ... | ... | 128(133)136 |
| Anterior edge of genital cover to posterior edge of ventral plate | ... | ... | ... | 400(413)433 |
| Length of genital aperture | ... | ... | ... | 76(83) 93 |
| Breadth of genital aperture | ... | ... | ... | 89(91)111 |
| Posterior edge of genital aperture to anterior edge of anal aperture | ... | ... | ... | 119(136)153 |
| Length of anal aperture | ... | ... | ... | 128(138)154 |
| Breadth of anal aperture | ... | ... | ... | 145(156)162 |

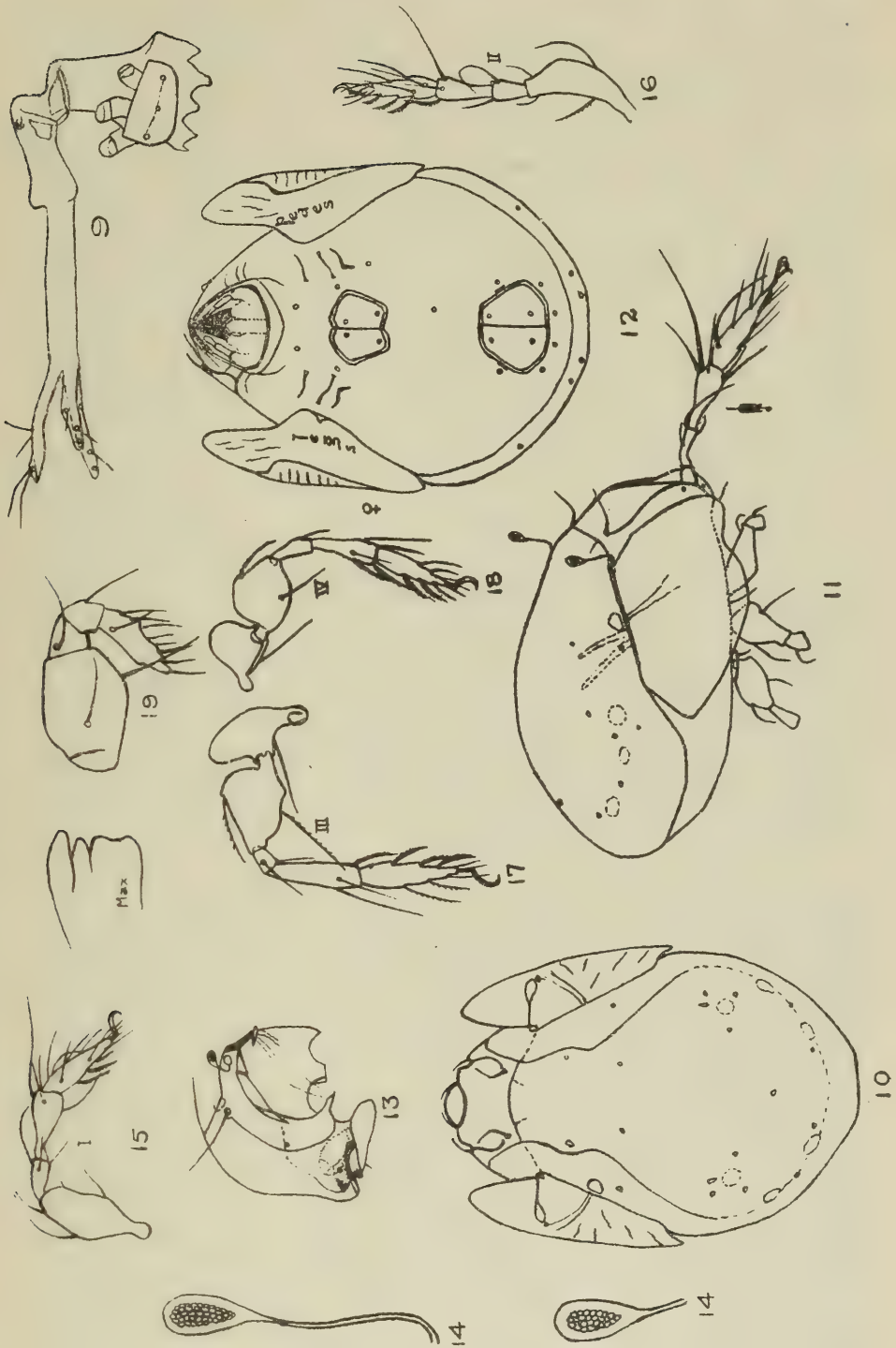
Color.—This species is generally quite opaque and of a dark brown color making it difficult to study in detail. Figures 1 and 2 have therefore been made with the right half as seen by transmitted light in balsam in toto mounts and the left half of the figure has the detail included and shadows from internal structure eliminated.

Form.—The general shape of the body is broadly pyriform (more the shape of the native Chinese pear), flattened on ventral side, not at all depressed though very broad for this group.

Cephalothorax short and broad; frons strikingly convex and rounded, sloping abruptly into the rostrum, with a distinct narrow, well-rounded groove running subparallel to lamellae and its own width from them; rostrum projecting beak-like beyond dome-like bulge of frons; rostral hairs moderately long, distinctly incurved near tip; lamellar hairs subequal to rostral hairs, anterior to lamellae and just lateral to termination of cephalothoracic grooves; inter-lamellar hairs remote from each other, so short as to be difficult to see; lamellae closely appressed to cephalothorax though distinct and protruding as an elongated ridge not reaching far posteriorly, passing onto ventral side of the cephalothorax and curving mesially to join the side of the camerostome (see fig. 2), contours rounded; sides of cephalothorax bulging laterally; pseudostigmatic organs medium long, generally not surpassing lateral edge of pteromorphae when viewed from above, strongly elbowed at proximal end, rigid, very slightly sinuous distally, slender, distinctly and gently swollen distally. This portion roughened by dull thorn-like protuberances (see fig. 3), the tip somewhat blunt, often with one or more fine awl-shaped protrusions; pseudostigmata flush with surface, oval, the chamber cylindric but constricted to half the diameter of its aperture; tectopodia small, band-like, extending from postero-lateral angles of cephalothorax down the side of the cephalothorax just posterior to and parallel with the lamellae, tapering to a point half way down the cephalothorax, thus closing the space between the lamellae and the pteromorphae.

Notogaster (fig. 1) high, broad, smooth, anterior edge distinct, posterior edge broadly overlapping ventral plate; areæ porosæ (visible in balsam in toto mounts by transmitted light): adalares medium long, wide at base, constricted behind base and gradually tapering to a blunt point; posterior mesonotal large, decidedly remote from each other, circular,





(visible only under special conditions): anterior ones elongate-ovate, lying along (half on each side of) anterior edge of notogaster, slightly removed from posterior thoracic apophyses which are short but prominent and decidedly converging; posterior lateral oval, near the anterior areæ and posterior to them though slightly ventrad; posterior mesial elongate-oval, very near posterior margin; tracheal foramina as in figure 1. There seems to be considerable variation in relative position of those about the mesonotal areæ porosæ. This difference in relative position does not seem to be entirely due to angle of perspective. Judging from those seen on the posterior margin of the notogaster, they seem to be lodged in shallow saucer-like depressions and consist of a minute nipple in the center of the depression. None of them bear hairs.

Pteromorphæ normal, broadly rounded anteriorly, the anterior pivot broad, curved, beak-like; outer edge with a sinuous notch opposite the groove, posterior edge broadly curved, the posterior angle abrupt, somewhat more than a right angle, inner edge sinuous; nervures frequent, linear, crenulate; groove wide, straight (though appearing curved in toto mounts) bordered on each side though more especially anteriorly by a heavily chitinized band making the groove definite and band-like, extending more than half way to lateral edge of pteromorphæ; a foramen in the center of the anterior band with a fine, serpentine groove running from it towards the base.

Ventral plate (fig. 2) relatively flat, the anterior half finely granular (the posterior edge of this granular area is indicated in the figure by the broken line running between the leg-cases and the genital and anal apertures); anterior edge sinuous, limited anteriorly by lamello-tectopedial band; leg-cases rectangular ventro-posteriorly, with rounded corners extending far ventrally, the ventral plate laterally depressed so as to entirely house the pteromorphæ limited anteriorly, by lamello-tectopedial band, the antero-dorsal corner produced in the form of a small triangle under the notogaster; genital covers small, narrowing posteriorly, each with three pores almost in a line; anal covers large, very slightly less than their own length from genital covers, strongly tapering anteriorly, anterior corners very much rounded off, posterior edge decidedly rounded laterally, two pores on each cover and a short "slit" on each side of aperture at the center; other foramina as indicated in the figure, in no case was it possible to see hairs arising from any of the "pores" on the ventral plate.

Camerostome decidedly inferior, overhung by rostrum anteriorly and enclosed by rostrum and ventral plate laterally, closed posteriorly by the hypostomal plate which is short, rapidly tapering anteriorly and emarginate at its tip, its surface with two pores each bearing a fairly long bristle, these pores situated in slight grooves which are produced anteriorly as lines. Mandibles normal for the group. Palps with five segments, the proximal segment short, somewhat triangular; second segment wide and heavy, nearly as long as distal three, sub-cylindric with three bristles, a long one on each side and the third ventral; third segment narrower, twice as short and tapering distally, with one long curved bristle; fourth segment still smaller, sub-cylindric, with two or three bristles, the posterior one being the longest; distal segment tapering by steps, thickly haired, all hairs curved anteriorly or dorsally.

Ovipositor (fig. 9) with three short "suckers" at base; basal segment short, broad, slightly tapering; second segment equal in length to first but smaller in diameter proximal end with flexible joint so that the ovipositor may be bent forward at right angles to first segment or parallel with body; third segment nearly twice as long as second but of smaller diameter; "fingers," three, each slightly curved dorsally just anterior to their center, each with three or four bristles on exterior (description based on but one specimen and therefore not necessarily accurate).

Legs well developed; unguis tridactyle, weekly heterodactyle; tibia I the broadest, tibia IV the longest and most slender, genu I the longest and broadest, genu III the shortest, femur II the longest, coxa III the largest. Leg I (fig. 5) has three plumose hairs on lower side of tarsus, five fine bristles at apex, two on the outer side, four on the dorsal side, two of which are fairly long and curved, and one on inner side; tibia very wide dorso-ventrally at distal end, with two plumose hairs on lower side, the posterior-most being but weekly plumose, a bristle on outer and lower side, one on inner and upper side, and two on dorsal side the posterior-most being extremely long (the longest one on the body) all these bristles are situated on the anterior half of the article; genu I with a weekly plumose hair on ventral side and a long curved bristle on dorsal side, somewhat angled at proximal end; femur large, wide, blade-like, bent and tapering proximally, with two weekly plumose hairs on dorsal side and one on ventral

ide; coxa small, negligible. Leg II (fig. 6) has three plumose hairs on lower side of tarsus, about five fine bristles near tip, three bristles on dorsal side, and a weekly plumose hair on outer side; tibia with two plumose hairs on lower side, and a fairly long bristle on dorsal side; genual with a weekly plumose hair on under side at the distal end and a long bristle on dorsal side at the proximal end. This bristle is bowed downward and posteriorly into the form of a hook. Femur blade-like, equal in length to tibia and tarsus, curved almost at a right angle, with a curved bristle on dorsal side at apex of the curve and a long one on postero-ventral surface, each with a few barbs, a decided tooth on ventral surface near proximal end; coxa very much reduced, with a single bristle directed parallel to femur. Leg III (fig. 7) three plumose hairs on lower surface of tarsus, four fine bristles at tip, four on dorsal side and one on outer side; tibia with a plumose hair on lower side, an outer lateral bristle and a long dorsal one; genual small, with an outer bristle and a shorter dorsal one; femur triangular, blade-like, with lower edges gently curved, a weekly plumose hair on lower edge and a fairly long curved bristle above rising from a distinct notch; coxa gourd-like in outline but flat, the neck on one side, a long bristle arising from the lower surface. Leg IV (fig. 8) with very slender tarsus having three fine bristles near tip, three plumose hairs on the lower side, one bristle on outer side and two bristles on dorsal side; tibia with two plumose hairs on the ventral side on distal half, a long bristle near posterior-most ventral plumose hair and one long bristle on dorsal side; genual elongate and with two long bristles on dorsal side, the anterior-most being the longest; femur broad, bladelike, suddenly constricted at each end to form the articulation, a very thick, rough, spike-like bristle on dorsal side and a bristle on lower side; coxa large, blade-like, rounded above into a lop-sided lobe, ridged along base from which there arises a fairly long, slender bristle, posterior end produced downward to form an articulating head.

Type Locality.—Western Hills, Peking. Sixteen specimens taken September 17th from the under surface of stones in company with *G. altera*, five specimens taken September 22nd from base of a rotten branch on the ground in one of the burying grounds one quarter of a mile to the southward.

Types.—In my own collection, No. 21140-3.

GALUMNA SINUOFRONS SP.N.

Diagnosis.—Body small, .43 mm. long, fairly high, tan to brown, semitranslucent; frons vertical and with a broad median undulation; pseudostigmatic organs medium long, somewhat rigid, with very slender shaft and a very much wider, prominent head; interlamellar hairs fairly long; cephalothoracic bristle formula: pst. c. 1, il.h. 2, l.h. 4, r.h. 3; anterior edge of notogaster distinct; pteromorph groove narrow, the pore anterior to it inconspicuous; pteromorph nervures few, short, crenelate.

Dimensions.—(Twelve specimens measured).

| | |
|--|---------------|
| Total length of body | 406 (429) 447 |
| Length of notogastral plate | 320 (355) 379 |
| Breadth of notogastral plate | 275 (293) 291 |
| Length of pteromorphae | 229 (241) 262 |
| Distance between interlamellar hairs ... | 65 (74) 82 |
| Length of ventral plate along median line ... | 303 (327) 344 |
| Length of camerostome | 66 (78) 84 |
| Breadth of camerostome | 85 (87) 90 |
| Anterior edge of genital cover to posterior edge of ventral plate | 252 (262) 279 |
| Length of genital aperture | 47 (54) 61 |
| Breadth of genital aperture | 62 (63) 70 |
| Posterior edge of genital aperture to anterior edge of anal aperture | 86 (92) 98 |
| Length of anal aperture | 75 (80) 86 |
| Breadth of anal aperture | 85 (88) 94 |

Color.—This species varies (in balsam mounts) from tan to reddish brown and is from semitranslucent to somewhat opaque. The thinner or smaller parts are necessarily lighter.

Form.—The general shape of the body is broadly ovate from above, slightly depressed, as viewed from the side, though dorsal outline is arched, and with relatively flat venter.

Cephalothorax (figs. 10, 11 and 13) unusually short and broad; frons sloping with unusual abruptness down to the rostrum, with a wide, shallow, median concavity giving the frons a sinuous outline from above (whence the specific name); rostrum small, projecting as a small, flat cone from this groove; rostral hairs moderately long, stiff; lamellar hairs slightly shorter than rostral hairs, on the anterior-most curve of lamellae; interlamellar hairs rough, fairly long, curved upwards near their middle, located just posterior to

termination of the lamellae; lamellae sinuous from above and from before so that their anterior-most section is closest to cephalothorax though projecting distinctly from cephalothorax throughout most of their length, appearing smoothly rounded from the side (fig. 13) and band-like with the hair pore at anterior-most part and very near edge, curving ventrally to abut against the anterior-most end of ventral plate; sides of cephalothorax obtusely angled antero-laterally so as to form an angular channel between it and the lamellae; pseudostigmatic organs (fig. 14—foreshortened) medium-long, not surpassing lateral edge of the pteromorphae when viewed from above, elbowed at proximal end, rigid, with very slender slightly sinuous shaft, and wide, unsymmetrically oval head which appears coarsely granular; pseudostigmata flush and inconspicuous; tectopodia (fig. 13) narrow, band-like, tapering to a point ventrally, filling in space between pteromorphae and lamellae.

Notogaster (fig. 10) medium high, gently convex, smooth, anterior edge distinct, posterior edge truncate, with latero-posterior edge overlapping ventral plate; areae porosae: anterior ones inconspicuous, elongate-ovate, lying along (half on each side of) anterior edge of notogaster (fig. 13), appearing contiguous to posterior thoracic apophyses which are short, prominent and converging; adalares inconspicuous, very short and blunt; posterior mesonotal circular, decidedly remote from each other; posterior lateral oval, not close to the previous and almost directly posteriad; posterior mesial oval, further from the posterior lateral than the posterior lateral are from the posterior mesonotal, and slightly larger than the posterior lateral; tracheal foramina as in figures. Those about the posterior mesonotal areae porosae fairly constant in relative position.

Pteromorphae normal, gently rounded anteriorly; notch in ventral margin situated rather far anteriorly; posterior angle obtuse, somewhat over a right angle; groove narrow, with an inconspicuous pore anteriorly; nervures short, not prominent, not crowded on disc, much more so along ventral edge.

Ventral plate (fig. 12) relatively flat, anterior edge gently sinuous, limited anteriorly by camerostome and lamellae; leg cases not encroaching far upon ventral plate, their ventral outline sinuous, formed by ventral border of apodematal butts, pteromorphae far surpassing this line and reaching when closed nearly to the foramina or pores which diverge from base of camerostome, ventral plate therefore without lateral depressions for housing the pteromorphae; genital covers small, narrowing posteriorly, each with two

pores, the anterior ones antero-median, the posterior ones postero-lateral, two fine hairs at anterior edge of aperture (only visible under special conditions); anal covers not much larger than genital covers, more than their own length from genital covers, strongly tapering anteriorly, aperture with five well formed angles; each with two pores or foramina equidistant from median line; a short "slit" on each side adjacent to lateral pores; other foramina as indicated in the figure, in no case was it possible to see hairs arising from any of the pores on the ventral plate.

Camerostome inferior, short but broad at base, enclosed by rostrum on three sides, the ventral plate not reaching far anteriorly; hypostomal plate long, almost entirely closing the camerostome (fig. 13) with two tiny hairs very near tip; mandibular area short; palps wide and heavy at base, slender distally, the proximal segment negligible, second segment very broad, broadest in middle, with a long lateral and a long ventral hair; third segment much narrower, and nearly three times shorter than second, with a long hair postero-dorso-laterally; fourth segment about equal in length to third, but narrower, cylindric, with a long, dorso-median hair; distal segment fairly cylindric, tapering distally by steps, with many hairs all turned anteriorly (dorsally).

Legs well developed; unguis tri-hetero-dactyle; tibia I the broadest, genual III the shortest, femur II the longest, coxa III the longest. Leg I (fig. 15) with at least three plumose hairs on lower side of tarsus, six fine hairs about distal end, two on outer side, four on dorsal side, the next to the last from the joint decidedly incurved; tibia very wide dorso-ventrally at distal end, with a plumose hair on lower side, a hair on each side and a very long and strong one on dorsal side, it being so long that when the animal has its legs folded up under the pteromorphae this bristle projects well beyond the cephalothorax, all these hairs are situated on distal end of tarsus; genual with a hair on inside, one on lower side and a long recurved one on top, all three situated near distal end of article; femur large, wide and blade-like, broadest in middle, with a hair anterior to widest part both above and below and another one on upper side, distal end; coxa small, negligible. Leg II (fig. 16) with three plumose hairs on lower face of tarsus, about five fine ones about distal end, three on dorsal side and two on side; tibia with a plumose hair on lower side, a rough hair on each side and a somewhat long bristle on upper side, all three situated on distal end of article; genual with a single rough hair ventro-distally and a long recurved bristle dorso-distally; femur

long and curved with a weakly plumose hair ventro-proximally, a long curved one on dorsal side behind the middle and two smaller distal hairs; coxa small, subtriangular. Leg III (fig. 17) with at least three plumose hairs on lower surface of tarsus, four or five fine hairs about distal end, two not strongly plumose hairs on dorsal side and one on outer side; tibia somewhat cylindric but with a swelling anteriorly on dorsal face, with a fairly long plumose hair on lower side, a slender hair on outer side and a long, strong bristle on dorsal side, all three situated on distal end of article; genual short with a short, rough hair on lower side and one on side, both near apex; femur large and broad, with a strong, high, diagonal carina on outer side, a fairly long, plumose hair on upper side near posterior end and a still longer one on ventral side near middle, articulation very low and neck-like; coxa large and long, very much produced dorsally as a broad wing and the articulation produced neck-like in the opposite direction, with only one long hair near base of socket. Leg IV (fig. 18) with at least two plumose hairs on lower side of tarsus, about four fine hairs about distal end and two dorso-laterally on each side; tibia with two plumose hairs on ventral side, a short hair on outer side, two hairs on dorsal side, the posterior one being long and strong, all of these being on distal end; genual fairly long, with a hair dorso-distally; femur broad and short with a low, diagonal carina on the outer side, articulation very low and neck-like, a bristle above near center and one below near center; coxa produced into a high casque dorsally, straight ventrally, with a long hair near center, articulation neck-like but not long.

Type locality.—Grassy plots about Peking. Some two to three hundred specimens were taken on September 22nd by sweeping the high, rank growth of grass under the pine trees of one of the burial grounds south of Ch'ao Yang An. One specimen was also found in moss scraped off the pavement in the burial ground, and another was found in company with the species mentioned above.

The individuals of this species are rapid walkers (compared with other species of this genus) and have a very strong tendency to rise or climb.

Types.—In my collection, No. 21152-2. Specimens also sent to Dr. A. C. Oudemans and Dr. Max Sellnick.

Figs. 1, 2, 5-8, 10-12, 15, 16, 18, all about the same magnification.

Fig. 17, slightly greater magnification.

Figs. 9, 13, decidedly more magnified.

Figs. 3, 4, 14, 19, very much more magnified.

THE DISTRIBUTION AND HABITS OF THE ARGALI SHEEP OF CENTRAL ASIA

DAVID SJÖLANDER

INTRODUCTION.

The author of this paper is collector for the Zoological Department of the Swedish State Museum and the A. B. Filmindustri of Stockholm, and came out to China to work with the Nyström Institute for Scientific Research in Shansi as headquarters, which institute is associated with the Shansi Government University, Taiyuanfu.

The country where Mr. Sjölander made his personal observations of the Wild Sheep, viz. the range N. of Kuei-Hua-Ch'eng, was until recently included in the administrative area of Shansi Province.—(*Editor.*)

I.—Racial Division and Geographical Distribution of the Wild Sheep in Central Asia.

The highlands of Central Asia are no doubt the headquarters of the Wild Sheep. It is here that they attain their maximum development not only with regard to the number of races but also in the sense of bodily dimensions. It is also probable that we find here the cradle from which originated their cousins, the domesticated sheep. The species of wild sheep are numerous, but the group which generally attract the greatest interest are the giants amongst these animals, namely the so-called Argali Sheep.



OVIS AMMON.

ALTAI.

“Argali” is a Tataric name for the species “*Ovis ammon*” which lives in the frontier ranges of Altai and Siberia, but this name has somehow come to be the usual common designation for all the races which together form this group.

The name became first known in Europe some time in the middle of the thirteenth century through the Flandrian traveller William of Rubruck who relates that he has seen a wild animal which was called “Archo.”²⁷

Regarding the discrimination of species of Wild Sheep there seems to have existed a remarkable degree of confusion, because some zoologists maintain that each of the larger mountain massifs harbour one or several species, whereas others are of the opinion that the majority of supposed species are only to be considered as local forms or subspecies.

R. Lydekker²⁸ writes concerning these conditions as follows: “From the point of view of the systematic naturalist, sheep form an excessively difficult group to deal with. In the first place, several of the local forms are so similar to one another that it is almost impossible to decide whether they should be regarded as species or races.”

To enter here upon these discussions is outside the margin of this Paper but perhaps part of the description to follow later will throw some light on the subject. For the present I shall limit myself to a short description of the distribution, appearance, and habits of the Argali Sheep, living in the marginal districts of the Mongolian Plateau, the Gobi, Dzungaria and the Tarim Basin.

²⁷ Douglas Carruthers, *Unknown Mongolia*, Vol. II, pp. 320-321.

²⁸ R. Lydekker : *Wild Oxen, Sheep and Goats of All Lands*, p. 151.

We propose to establish the following divisions and to describe the Wild Sheep in Central Asia in the following order:

- 1.—*Ovis ammon typica*.
- 2.—*Ovis darwini* (?).
- 3.—*Ovis commosa* (formerly called *jubata*).
- 4.—*Ovis hodgsoni*.
- 5.—*Ovis poli*.
- 6.—*Ovis carelini*.
- 7.—*Ovis littledalei*.
- 8.—*Ovis sairensis*.

Ovis ammon typica.

This race is at present distributed over the entire Great Altai or Mongolian Altai Range until its eastern termination; furthermore in the isolated range Baitik Bogdo south of the Altai proper; also in other more or less outlying ranges in the easternmost extension of Altai. Also along the Little Altai to Turgan or Kundelun where it probably has its eastern limit, though formerly it was also found on the southern slopes of Tannu-Ola.²⁹

Ovis darwini.

Was found by the Russian explorer Nikolai Przhevalsky on his journeys in 1876-1877. P. does not give any detailed description, but only the following short notes:

"Between Galbyin—Gobi and the Churdu range we discovered a new species of Argali, which I named *Ovis darwini* in honour of the famous English scientist Charles Darwin. The difference between the various species of mountain sheep is slight, but yet noticeable. The newly discovered species seems to prefer the most desolate parts of the desert. We shot two specimens."

The Churdu range belongs to the easternmost, somewhat isolated ranges running parallel with the Altai and consequently we may assume that Przhevalsky's *O. darwini* is probably only a variation of *O. ammon*.

In the nature of additional evidence we have in D. Carruthers, *Unknown Mongolia*, Vol. II, page 346 the following notes regarding this part of the Altai range:

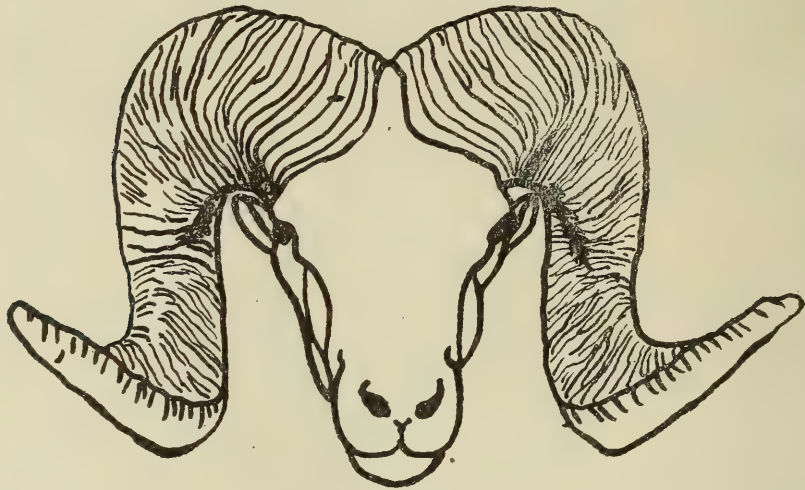
Though more than one Russian explorer mentions having met with sheep in the Eastern Altai, it is to Sir

²⁹ Carruthers, *Unknown Mongolia*, page 627.

Francis Younghusband that we are indebted for by far the most interesting information on this subject. In his remarkable journey of 1887 across the Gobi, from Peking to Hami, he struck the Great Altai at its most easterly extremity in longitude 100° East. He estimated the height of the range, even at its terminal portion, as 9,000 ft. above the sea-level, and the natives reported grassy plateaux in the centre.

These two combinations sound suitable for *O. ammon*. Though Sir Francis did not visit these high plateaux, where the sheep would be at that season (July), yet on the outlying southern foothills horns were to be found lying on the ground which, from their great girth of 19 inches and general shape, undoubtedly belonged to "*Ovis ammon typica*."

Ovis commosa (formerly *O. jubata*).



OVIS COMMOSA.

Ta Tsing Shan. North China.

This North China or S. Mongolian race was first discovered in the mountains North of Peking and was first described by Peters in 1876.

Since that time it has not been found in the Peking hills but was again discovered in the frontier range Ta Tsing Shan between Suiyuan and Mongolia sometime in the beginning of this century.³⁰

Though, as just stated, these Argali were first described by Peters in 1876, yet it was Przhevalsky, who, during his journey from Kalgan to Kukuchoto (Kuei-Hua-T'ing) in

³⁰ A. de C. Sowerby, *Fur and Feather in N. China*, p. 17.

1870, was the first to give information of their present existence in Ta Tsing Shan. How far their distribution extends in these ranges is somewhat doubtful, yet it seems that they are most frequent in a comparatively small district in this range, just north of Kuei-Hua-Ch'eng.

Ovis ammon hodgsoni.

The distribution of this species extends along the parallel ranges of Kuen Lun in the southern border of Gobi and the Tarim basin. Accurate information is lacking regarding the eastern limit of their distribution and whether they roam as far as the Nanshan mountains. Przhevalsky who travelled through this latter range does not mention Argali sheep here and besides he found these mountains extremely poor in game.

In Anambairin-Ola and several localities in Altyn-Tagh Argali sheep were found by Sven Hedin.³¹

Przhevalsky found *Ovis hodgsoni* in the neighbourhood of the Dumbure mountains which belong to Kuen Lun. Thus Anambairin-Ola, which, situated between Nan Shan and Altyn Tagh proper, is the easternmost point in Gobi's southern border zone, where these sheep are reported to exist.

In the interior of Tibet they occur over the entire Tibetan plateau, from N. Ladak to the district north of Sikkim and probably farther east. In western Tibet they are not to be found during summer at lower elevations than about 15,000 ft. above the sea but in the winter they descend locally to some 12,000 ft.³²



OVIS POLI.
PAMIR.
Ovis poli.

³¹ Sven Hedin, *Central Asia and Tibet*, Vol. II. pages 62, 210, 218.

³² R. Lydekker, *Wild Oxen, etc.*, page 183.

This magnificent race of Argali is typical for the Pamir Plateau; it was first mentioned by Marco Polo and was afterwards named after him.

Ovis poli (*O. ammon poli*) occurs in Pamir from Hunza to the neighbourhood of the sources of Amu-Daria (Lydekker). In the north "poli" inhabits also Chinese territory near the Karnart pass, at the head of the Kuntemis river. Also farther south, in the Taghdumbash, the Kungerab, Obrang, Bayik, Kukturuk and two nullahs near Bozai Gumbaz.³³

Probably this race has had a much greater distribution also outside Pamir proper, because in the alpine regions of Tian-Shan, on the frontier of Pamir, their horns and skulls are much in evidence; though these places are now inhabited by the Tian-Shan race "*Ovis ammon carelini*."³⁴

Ovis carelini.

The region inhabited by this race stretches from the N.E. end of the Ala-Tau mountains (which form their northern boundary) westwards along the range to the head of Borotala and from there eastwards along the entire stretch of foothills of the Tian-Shan, from Zaisan Nor to Karlik-Tagh, which latter forms the farthest point of the range.

They are found throughout the whole Central and S.W. Tian-Shan, from Eastern Yuldus as far as the Aksay and Atbaski plateaux. In the latter localities they were observed by Carruthers during his visit there in 1908. In his *Unknown Mongolia* Vol. II, page 569-570, from which the above information is gleaned, we find additionally the following notes *re* the distribution of "*carelini*."

Throughout the whole of their northern and eastern distribution which includes the Ala-Tau, Borotala, N. and E. Tianshan only "*carelini*" are met with. For instance, the horns seen in the Karlik-Tagh, right on the edge of the Gobi, were in every respect similar to those of the Borotala.

Except in the above-mentioned regions of Tian-Shan "Argali" occur also in the Kurruk-tagh ranges which belong to the Tian-Shan though somewhat isolated from this massif. Wild sheep have here been observed in the neighbourhood of Tograk-Bulak by Dr. Sven Hedin in 1900.³⁵ Kurruk-Tagh consists throughout of rather low and almost completely

³³ Ralph P. Cobbold, *Innermost Asia*.

³⁴ *Encyclopaedia Britannica*, 11th Edition.

³⁵ Sven Hedin, *Central Asia and Tibet*, Vol. I, page 339.

barren ranges. Except by wild sheep its few, small and scattered oases are only inhabited by hare, antelopes and wild camels.³⁶ Whether the Argali of Kurruk-Tagh belong to the species "carelini" or some of the following varieties it is impossible to ascertain. Dr. Hedin only states the presence of wild sheep but does not mention the species.

Ovis littledalei.

This other variety of the Tian-Shan wild sheep occurs strangely enough right inside the area inhabited by *O. carelini*. They are to be found on the divide between the Manas and the Yuldus, where they occupy territory of the same nature as the grounds of "carelini" and in almost equal numbers.³⁷

Tian Shan seems to harbour yet another variety which also occurs on the Yuldus. In Carruthers *Unknown Mongolia* we find the following statement:

Besides "littledalei," it will probably be proved that a third, not yet named variety inhabits this region (West Yuldus). This third variety which is as yet imperfectly known, is evidently much more rare than the two others. It approximates to *O. hodgsoni*, its main characteristic being massive horns of short length and narrow spread.³⁸

Ovis sairensis.

This race was first discovered by Mr. St. George Littledale, who found them in the Sair or Jair mountains at the eastern end of Tarbagatai. They occur also south-east of Lake Zaisan; southwards they extend through Urkashar and other smaller ranges as far as the Maili-Barlik massif. This represents their eastern limit. How far their distribution extends westwards along Tarbagatai seems to be imperfectly known.

Wild Sheep occur in the low mountains north of Balkash but whether these are "sairensis" or *O. nigrimontana* (which has been stated to exist here) is still an open question.³⁹

General manner of distribution.

To summarize in a preliminary way the facts as stated above we should make use of the adjoining sketch-map of

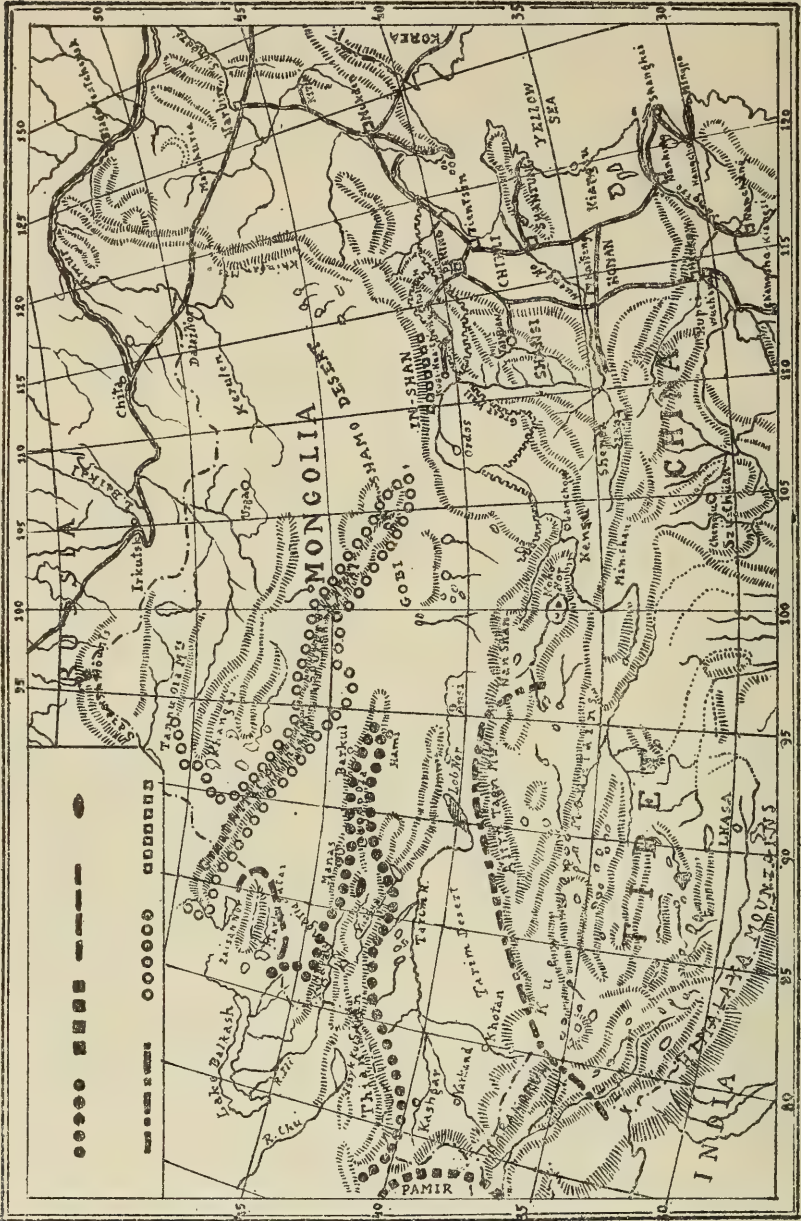
³⁶ *Encyclopaedia Britannica*, 11th Edition Vol. VI, page 166.

³⁷ Carruthers *Unknown Mongolia*, Vol. II, page 570.

³⁸ Carruthers *Unknown Mongolia*, Vol. II, pages 570-571.

³⁹ Carruthers *Unknown Mongolia*, Vol. II, pages 548-549.

SKETCH-MAP OF CENTRAL ASIA, SHOWING DISTRIBUTION OF WILD SHEEP.



OVIS
CARELINI POLI SAIRENSIS LITTLEDALEI HODGSONI AMMON TYPICA COMMOSA

Central Asia if we contemplate the location of the various sheep grounds, the conclusion is self-evident, that these regions more or less border on or are situated in the great desert—or plateaux—areas.

In other words, we may say that the ranges inhabited by Argali form a more or less complete frame round those territories. The possible explanation of this so-to-say periferical arrangement is a question to which I shall recur later.

*General nature of grazing grounds and the
habits of Wild Sheep.*

O. ammon.

Ovis ammon typica live as a rule at comparatively low altitudes, 6,000-9,000 ft. perhaps even lower down, depending on the grazing possibilities. During the hot season they seek higher, grassy plateaux, but during the winter they are met with in the more sheltered foothills.

The abundantly grass-covered, plateaux-like regions which are traversed by broad valleys seem to be their favourite haunts. But it must be remembered that with regard to the distribution of *O. ammon typica* as well as of the other Argali sheep, the steady progress of cultivation of these grounds is the probable reason of the decrease in their numbers, as well as the diminution of their distribution areas. I quote from Carruthers work, p. 345.

"Great numbers are yearly driven over to the Chinese side by the steadily advancing Russian settlers. This forces them to seek new grazing grounds year after year; so the game is slowly but surely driven up in the higher and less accessible regions. The contraction of their grazing grounds is the chief cause of the steady decrease in the number of the Wild Sheep of Central Asia."

On page 330 of the same work a description of the habits and favourite grounds of *O. ammon* is given thus:

"Wild Sheep generally spend several hours during the middle of the day, especially during the hot summer months, in lying down in one of those unapproachable positions, which the hunter learns to know only too well.

"A very favourite site is on a shale-slope, which harmonizes perfectly with their own colours, near the crest of some commanding, round-topped hill, though not actually on the top for that would advertise their position to their enemies. The wind curling over the crest to them, secures

them on their only blind side; for few beasts possess a more highly developed sense of smell. In every other direction their restless gaze wanders incessantly over the vast expanse of smooth rolling grass and shale, across which, as a rule, it is quite useless for a human being to attempt to approach them. If sheep have been driven into rougher and more broken ground, as is often the case in the Tian Shan, where it is impossible for them to take up a position commanding an extensive view, they have the almost uncanny knack of selecting a resting place where, owing to the formation of the ground, the wind converges upon them in all directions. For this reason the horse-shoe-shaped head of a valley is much favoured by them."

Page 331. "In the early morning and again in the evening, they leave their impregnable position to graze. The rolling nature of the ground which they then have to pass over, gives the hunter his opportunity."

This description of the habits of the Wild Sheep I consider so typical for the whole family, that on the whole it may serve to give a true idea of most of the Argali-races. Yet the different topographical conditions in the territories of the several species may to some degree influence their mode of life, resulting in different habits in different localities

Habits of O. darwini.

Regarding *Ovis darwini* very little is known except Przhevalskys' short statement that it favours the most desolate parts of the desert.

Habits of O. commosa.

The region of *Ovis commosa* stretches along the Ta Tsing shan mountain range on the south border of the Mongolian plateau (*see map*). These ranges extend on the whole in an east-west direction and consist of the mountains Chara-Chada, Suma-Chada, Charaktshin-Ola and Ongün Ola in the east. Westwards we have the In-shan mountains, Muni Ola Sheiten Ola, etc. How far east and west Argali exists in these ranges is still imperfectly known but it is stated that they occur to a distance of at least 200 miles west of Kuei-Hua-Ch'eng city. (Roy Chapman Andrews).

It is more than probable that in the past the whole range has been inhabited by Argali, the distribution then probably extending as far as the Khingan mountains at the eastern border of the Mongolian plateau. As mentioned before the

mountains near Peking harboured Argali only some tens of years ago. Since then they have however completely disappeared from there. The territory at present frequented by these animals can with certainty be delimited only to a comparatively short stretch within the afore-mentioned range (Ta Tsing Shan). The part of this mountain-chain, which I have had the opportunity to visit, lies immediately north of the city of Kuei-Hua-Ch'eng, near the bend of the Yellow River, which place until lately belonged to Shansi Province, but now is under the jurisdiction of the new province Suiyuan.

The region visited embraces the east end of In-Shan, Ongün-Ola and certain parts of Suma-Chada and Charaktshin-Ola. Here the Argali is still to be found, though perhaps not so abundantly as in certain distant parts of Central Asia; yet in certain sparsely populated regions the sheep are even here not difficult to find.

The mountains rise here rather abruptly from the Suiyuan plain, which is only 3,480 ft. above sea level. Near the plain the mountains are wild and rugged, fissured by a number of deep and narrow gulleys in which water is generally running all the year round.

Penetrating further northwards into the range the wild and rocky border land slowly merges into a vast, grassy highland, the altitude of which is on average 6,500—7,000 ft. above sea-level.

In the narrow zone between the Mongolian Plateau and the Suiyuan plain we find all that remains of the once more numerous and more widely distributed Argali sheep.

Existing here as we may say on the staircase from China to Mongolia they are no doubt doomed to extinction within the not very distant future, because here as elsewhere in the borderland agriculture conquers yearly new strips of land. The desire to protect animals and nature through reservations has not yet arisen in this great Republic. Nothing is saved, everything annihilated to serve the interest of man and the favourite grounds of the Wild Sheep are soon transformed to fields of agriculture for the Chinese farmer.

Deeper and deeper cultivation penetrates into every suitable valley, and where the valley-bottom does not suffice, the hillsides are terraced. Even the above mentioned grassy highlands in the interior of the range, which regions are the favourite grounds of the sheep, are now more and more furrowed by the plough.

The territory which has been comparatively untouched is the wild rocky zone between plain and highlands. But

even here the sheep are by no means undisturbed, owing to the people from the plains roaming about in the hills in search for fuel. They come in hundreds and thousands, penetrate into all the valleys and despoil the hillsides of trees, brushwood and even grass. These daily inroads of the fuel collectors cause the sheep to live in a constant state of fear and trepidation, they are driven from valley to valley or seek their shelter in unapproachable gulleys and precipitous slopes. When the people have left, and tranquility again reigns in the desolate valleys, they may return to their grazing grounds on the valley-sides.

One finds them in small herds here and there on the innumerable ridges or on the slopes of the deep valleys. The flocks generally consist of a small harem of females and youngsters with one or more, often several rams of different ages in company. Very old rams are sometimes met with all alone far up in desolate valleys living like hermits by themselves. But it is not unusual to find two or three rams in company, of which the biggest seems to be the leader.

In Ta-Tsing-Shan they are not found—like the *Ovis nahura* of Tibet—in large herds. The largest flock I saw on Ongün-Ola, consisted of twenty-two animals; of this at least half were rams of which several carried imposing horns.

In the region near the plain they graze as a rule down in the nullas of the rocky valleys, but if they are disturbed, they proceed over one of the ridges and are thus found again in the next valley. To hunt them here does not present excessive difficulty.

The regions where the sheep can live their own natural life are very few and far between in this part of Ta-Tsing-Shan. In the interior there remain however some territories to which cultivation has not as yet penetrated. Up there on the highlands the grass is abundant, the rocky ridges flattened out, the valleys broad and ample, and on the whole this country reminds me of the grazing grounds in West Kansu, which I visited later and which are inhabited by Goa-gazelles.

Here I found Argali in surroundings, where they were seldom disturbed; small herds or single animals could be seen day after day on the same slopes, grazing or resting.

In this open country it was not easy to get within range because here they do not allow the hunter to surprise them as down in the rocky valleys, where the hunt on the whole is astonishingly easy. Regarding their habits they resemble *O. ammon* (*see above*); like other wild sheep they graze morning and night sometimes also in the middle of the day,

but in the forenoon go to rest one after another often on the very grazing-ground. The youngsters are more nervous and often break the rest with grazing, or they take to attacking each other in boisterous play, which sometimes ends in a regular fight. On warm, calm days they choose a resting place high up on the slopes; when the wind is strong and cold, further down or even on the bottom of the valley.

During my visit here in the autumn of 1920 a long stormy period occurred during which it was useless to seek the sheep on the windy slopes, they were all on the leese side of the hills or down in the valley.

When they were alarmed they seldom ran straight up the slopes but chose often a slanting direction, without great hurry; they often stopped and gazed at the intruder. The crest was generally passed at the lowest place. When once their habits are learned, the hunt becomes tolerably easy. Yet one must be a good walker and climber because of the vast distances; large areas must often be searched before the prey is found. I found it a good scheme to place myself somewhere on the crest above the resting place of the sheep, after I had sent a man round to rouse them from the opposite side. When they tried to escape over the crest the sportsman generally got a chance.

It is a good thing to let the man not approach them point-blank, but walk as if he intended to pass them without taking notice. Instead of immediately disappearing in wild flight, the sheep will then slowly retire up the slope with their attention riveted on the intruder. The hunter up on top thus gets his opportunity.

That they are very easy to distract, I noticed one day when returning from the highlands. Just when the sun began to set behind the ridges, I entered one of those deep, rocky valleys which run out to the plain. While I was walking here in the middle of the valley bottom I perceived suddenly some dim figures moving towards me at a distance of 500-600 yards. They continued in my direction and when we were 300 yards off, they stopped hesitatingly; I could see that it was three venerable old rams with splendid horns. I got the idea to imitate the sound of a ram, when angry while I still proceeded on my way. The animals now deviated slightly but continued along the slope while I walked on still bleating. When we at last passed each other at 100 yards distance, I stopped suddenly, aimed quickly at the largest one, pulled the trigger and lo! I had the satisfaction to see him roll down the slope. The two others disappeared quickly into one of the side-gulleys. This method I repeated after-

wards several times when conditions justified the practising of such subterfuge. A possible explanation of their lack of fear may possibly lie in the fact that the rams still were in fighting mood, because the rutting time was then just passed (October).

Later on in the beginning of November I once found a small herd of ten animals resting on the bottom of a valley, shaped like an amphitheatre. The distance was quite too far for a successful shot and to get nearer was quite impossible without being observed. The resting place was so exceedingly well chosen that an enemy of whatever kind it might have been, had not the slightest possibility of approaching them. If I only had a man to send right round to the other side, then the problem could have been solved, but that day I had strayed away from my so-called escort.

While I lay there behind a rock and reasoned with myself about possible chances, if I had been at that or that place, my glance fell on a little loess hill behind the sheep. If I now sent a bullet right into that dusty loess—it was done and without reasoning the sheep stampeded up the slope right towards me; when they passed, I could easily pick out the animals I wanted for my Museum series. The animals were so surprised that they did not know from where the bullet came, they simply rushed blindly to their fate. The whole of this exciting episode only lasted a few seconds and I saw several animals simultaneously roll down the steep slope in their death struggle.

Later in the autumn when the snow lay deep on the highlands or the cold northwind swept over these exposed grounds, the sheep retired down to hills bordering the plain. Certain places where the foothills change to small mounds before they entirely merge into the plain seemed now at times specially frequented. The grazing was not particularly abundant between the hillocks but in spite of that I found them there day after day. What struck me especially was that I found them one sunny and warm day in November peacefully grazing right out in a desolate part of the plain itself. When I tried to get near they retired up towards the lower hillocks at the foot of the range and continued to feed. Next day I again passed the same place but found then only three older and two younger rams. They did not show particular alarm, raised their splendid heads, gazed curiously for a while and then continued to graze. But as soon as we stopped they at once took flight. One of my escort sped a bullet after them with the lucky result that one remained on the field.

Przhevalsky, who as I have stated, found *O. commosa* further eastwards in 1870 gives the following description. "Here we found for the first time one of the most remarkable inhabitants of the high plateaux of Central Asia, namely the Argali sheep, who lives in the most unapproachable country, but in the spring when new and luscious grass covers the plateaux, joins with the antelope herds. The Argali sheep is noted for its sharp senses; before the herd begins peacefully to graze on the steppe, guards are always sent out to spy from a hillock or crag about the horizon. Should no danger be spied, the guard returns to the flock which now begins calmly to feed on the grazing ground. . . . The Mongols use to hang a piece of cloth from a pole to distract their attention."

Habits of O. hodgsoni.

Lydekker (*Wild Oxen, etc.*, p. 184) describes *hodgsoni* in the Changchenmo district of Ladak thus:

In the latter country during the winter these sheep inhabit the lower and more protected valleys, where snow does not accumulate to any great depth but with the advent of summer the old rams separate from the flocks to resort to more secluded situations at higher levels.

According to General Kinloch these sheep are very particular in their choice of locality, resorting year after year to the same spot, and entirely neglecting other hills which apparently possess similar advantages with regard to pasture and water.

The open nature of the ground they frequent, renders the old rams exceedingly difficult to stalk and even when they resort to more broken ground, where the actual stalking is easier, their extreme wariness often defeats the most carefully laid plans of the sportsman.

The breeding season is in December and January, when the flocks are at comparatively low elevation; and the young are born about the following May or June.

Habits of Ovis poli.

According to Lydekker (*Wild Oxen, etc.*, p. 194) *O. poli* are not at all fond of difficult and rocky mountains. Their true ground is the long rolling plateau or rounded hills of the Pamirs. I never saw one in a really bad place. They are very wary, and often difficult to stalk on account of the ground.

They seem to be affected by height. I more than once saw them, when going at full speed uphill, open their mouth as if in want of breath. They like to stop from time to time.

As a rule they dislike snow and are very cautious when in deep new snow.

They feed early in the morning and keep moving about till ten or eleven o'clock in the day; then they lie down, sometime on the same spot, or oftener they go up some bare hill, where they scratch the ground and make a sort of big "form." I did not notice that they were at all fond of lying on the snows.

After keeping very quiet all day, about three to four o'clock they go again to feed.

They nearly always resort to the same places and the same nullas. Big herds always consist of females and young males.

When about five years old the males herd together in small parties of two or three, sometimes more, but scarcely ever exceeding eight or ten. Once only did I see twenty-three.

These herds of males spend the summer in the highest and most remote nullas, but in winter they come lower down, and many die of starvation in the spring, when, after a bad winter, the food runs short. One can see on the ground many heads of old individuals which died in spring.

During the summer there is not a single big male to be seen near those places where the horns are found, and it is evident that they only come in winter.

Habits of O. carelini.

According to Lydekker *Ovis carelini*, like other sheep, does not live exclusively amongst the rocks, as is the case with the different species of *Capra*. It is not satisfied, like the latter, with small tufts of grass growing in the clefts of rocks, but requires more extensive feeding-grounds; it is therefore more easily driven from certain districts than is the case with "*Capra*." In the neighbourhood of Kopal, for instance, the goats are abundant in the centre parts of the steppes of Kara, whilst the sheep have been partially driven from these places visiting them in autumn. On the southern ranges of the Semirechinsk Altai, in the vicinity of the river Ili, wherever good meadows and rocky places are found, *O. carelini* occurs at elevation of from 2,000 to 3,000 feet; at the sources of the river Lepsa, Sarkan, Kora, Karatala and Koksa it goes as high as 10,000 feet and even

to 14,000 feet in the neighbourhood of the upper Narin. In winter it is found at much lower altitudes.

Carruthers writes about the haunts of *carelini*: (*Unknown Mong.*, p. 562). "At the top of an outlying bluff, overlooking a likely little valley, we settled for a thorough spying. At our feet ran a small stream carrying the melting snow from the drifts far above down to Borotala; from each side of this short valley rose steep slopes broken into numerous small hollows. Right at its head, and just below the shale, two herds of rams were to be seen feeding among some ancient grass-covered moraines; there were six in one lot and eleven in the other. . . ."

(P. 558-9). "As we moved up the ever-narrowing valley, a few gazelles were sighted, but in absolutely unstalkable positions. Here and there bleached sheepheads lay about; they were very uniform in shape, unlike the mixed types met with on the Yuldus and in appearance intermediate between *ammon* and *poli*."

(P. 604). "On the following day, while driving along the main road, we saw a herd right down on the plain at the foot of the hills and certainly not more than 1,000 feet above sea-level."

Habits of Ovis littledalei (Tianshan).

Not stated but presumably like those of *O. carelini*.

Habits of Ovis sairensis.

Description of its territory by Carruthers (*Unknown Mong.*, p. 551). "Before moving into the Borotala we spent two days in hunting on the Western Maili plateau, almost overlooking the Dzungarian Gate.

This plateau is formed of innumerable small hills and hollows, the former being of a very uniform height—something like a sheet of corrugated iron, except that, instead of being parallel, they were jumbled up in hopeless confusion. There were no commanding positions for spying, so all we could do was to ride along on the chance of coming upon game."

Characters and dimensions of Wild Sheep.

Ovis Ammon.

An old male of this giant sheep has a height at the shoulder of over 50 inches and carries horns that exceed 60 inches in length and 20 inches girth at the base (Record measures).⁴⁰

⁴⁰ Carruthers : *Unknown Mongolia*, p. 320.

Horn of male is very massive, long and curving much outwards at the tips which are generally entire, so as to form considerably more than a complete circle; usually both front angles are much round off.⁴¹

Mr. J. H. Millar gives the following description of colour.⁴²

In autumn coat the coloration of an old ammon ram is very striking. The nose is white, forehead and cheeks grey-brown, neck and upper part of the body dark chocolate, freely sprinkled with white hairs which slightly predominate on the shoulders and along the back. This gives them a very grizzled appearance. The belly and rump-patch are white, legs grey-mottled above and white below the knees. In full winter coat an ammon ram is of a dirty white colour on the body and neck, and pure white on the nose, legs and rump. The ammon differs from nearly all other large Central Asian sheep in that he does not grow a long neck-ruff. In summer the coat is exceedingly short, but in winter it lengthens all over the body and neck to about two inches.

Ovis darwini.

It has been mentioned that the Russian explorer N. Przhevalsky on his journey in Central Asia 1876-77 believed that he had found a new species and called it after Charles Darwin. Its nature as distinct new species is however somewhat problematical and P. does not give any information regarding its bodily characteristics, size, horns, etc.

Ovis commosa.

Does not attain the size of *Ovis ammon*, but an old ram may yet reach 45 inches at the shoulder though few grow to that height. Twelve full-grown rams were measured by myself with the following result: 41 $\frac{1}{4}$ ins.; 42 ins.; 42 $\frac{1}{2}$ ins.; five at 43 ins.; 43 $\frac{1}{2}$ ins.; 44 $\frac{3}{4}$ ins.; 45 $\frac{1}{4}$ ins.; 45 $\frac{1}{2}$ ins. Of these the largest horns were carried by a ram measuring 43 $\frac{1}{2}$ ins. at the shoulder. The length from tip of nose to tip of tail varied between 60 ins. and 65 $\frac{1}{2}$ ins. The horns do not attain the length of ammon but exceed them in girth. The following are probably the largest known measures.

| Length | Basal girth |
|--|--|
| 47 $\frac{1}{2}$ ins., tops broken off | 19 $\frac{1}{2}$ ins. My own |
| 47 " " " " | 20 ins. Roy Chapman Andrews |
| 52 " " " " | 19 $\frac{1}{2}$ ins. A. de C. Sowerby |

⁴¹ Lydekker : *Wild Oxen, etc.*, p. 177.

⁴² Carruthers : *Unknown Mongolia*, Vol. II, p. 339.

From these measures we may conclude that *commosa* has greater basal girth in proportion to the length of horn than any other sheep of the Argali group. The curve of the horns form an almost perfect spiral; the tops are not so strongly bent out and this causes the spread between tops to fall very short of corresponding dimension in *ammon*, with his intensely bent tops.

A. de C. Sowerby describes O. commosa thus:

The Wild Sheep of North China is of a dark fawn grey colour with a very pronounced white croup disc, and cream-coloured legs. The hair is thick and in places inclined to be woolly. There is a well developed mane, while the hair on the front of the neck is long. In very old rams the shoulders and back become flecked with white.

They are very deep in the chest, light in the quarters with long, slender, though powerful legs. The tail is very short, being marked above with dark brown, which is connected with the brown on the back.

Ovis hodgsoni.

Characteristics: Size about the same as *commosa* with height at shoulders varying from 3 ft. 6 ins. to at least 3 ft. 10 ins.

Colour: In adult males the hair on the sides and lower surface of the neck is elongated into a large whitish ruff, which apparently persists throughout the year; there is also a shorter crest of dark hair running along the back of the neck to the withers.

Apart from the whitish ruff the general coloration is very similar to the typical race. The upper parts are greyish-brown, the throat, chest, under parts and insides of the limbs, the front surface of the legs below the knees and hocks, as well as a small caudal disk in the males, dirty white. The upper surface of the root of the tail has a dark mark, and the caudal disk and white on the legs are less developed than in either of the preceding races, the fawn of the hind legs sometimes extending completely round them above the hocks. In old males, probably in the summer coat, the back becomes grizzled, owing to admixture of white to the brown hairs. The ewes have little or no mane, less of white on the limbs, and the caudal disk much more indistinct.

Measures of horns tabulated in Lydekker's: *Wild Oxen, etc.*, vary thus: length between $42\frac{1}{2}$ ins. and $50\frac{1}{2}$ ins., girth $16\frac{1}{2}$ ins. to $19\frac{1}{4}$ ins., distance between tips 19 ins. to 23 ins. These were record dimensions as far back as 1896 and much larger measures have been obtained since that time. A. de C. Sowerby gives the following record measures, length 75 ins., girth $18\frac{3}{4}$ ins, which as regards length seems to be a colossal size for this race of Argali.⁴³

The horns of males are generally somewhat less massive and forming a less open spiral, which does not exceed one complete circle and is usually less; their tips almost invariably broken, the wrinkles apparently slightly less prominent and the outer front angle frequently distinct.⁴⁴

A. de C. Sowerby says about the horns.⁴⁵ The horns grow abruptly back, their ends coming flush with the animals nose, so that they have to be kept worn down in order that their bearer may eat. On this account long horns are the exception.

Ovis poli.

The Pamir race.

Characters: The size of adult males is slightly less than *O. ammon* and the build perhaps rather lighter (Lydekker).

General colour of upper parts of adult male in summer light speckled brown; most or all of face, throat, chest, under parts, buttocks and legs white, the white extending largely on to the outer surface of the thighs; a black streak from the nape to the withers; no distinct ruff on the throat.

In winter the hair is considerably longer, and forming a well marked white ruff on the throat and chest, and a darkish line of somewhat elongated hair extending from the nape to the withers; the upper parts showing a more or less rufescent tinge, especially towards the border of the dark area.

In females the neck is brown in front in the winter pelage; while in the summer coat there is typically no blackish stripe extending from the head to the root of the tail, although this is present at least in the winter coat of the second race (*O. carelini*).

⁴³ A. de C. Sowerby : *Fur and Feather in N. China*, p. 18.

⁴⁴ Lydekker.

⁴⁵ Sowerby.

The hair is even in the summer longer than in *O. ammon* (note that they live at greater altitudes and therefore in colder climate). In the summer pelage the face of the male is pure white and there is much white on the underparts and flanks, the winter pelage of this animal is practically indistinguishable from that of the Tian Shan race.

Females in summer are uniformly blackish brown above without a distinct median dorsal stripe and still more white on the flanks and thighs.

The horns are thinner and longer than in *O. ammon*. The animal cannot touch the ground except with his mouth on account of the shape of the horns.

Horns of adult rams are of great length with both the front angles usually well developed at the base, and the spiral which may be either comparatively close or extremely open forming much more than a single complete circle. Frequently though by no means invariably the wrinkles on the outer lateral surface of the base of the horns are but slightly developed.

Rowland Ward's list of the largest measures of horns of *O. poli* includes 24 specimens varying between 62 ins. and 75 ins. along the curve; 15 ins. to 17 ins. basal girth and 39 ins. to 56 ins. between the tips. The largest measured horns has 75 ins. in length, 16 ins. girth and $54\frac{1}{2}$ ins. between tips.

Ovis carelini.

Lydekker states that *O. carelini* attains a height of 3 ft. 6 ins. to 3 ft. 8 ins. at the shoulder.

It is distinguished from the typical race by the following characteristics. In the winter coat there is apparently rather less white on the buttocks and thighs and the upper part of the face. Colour at least brownish instead of pure white; female in winter coat with a dark stripe from the back of the head to the root of the tail.

Regarding the horns of *carelini*, Carruthers found many horns of dead animals at Borotala. Largest measures; length $60\frac{1}{2}$ ins. girth $16\frac{1}{2}$ ins. spread 38 ins. The best heads of *carelini* shot by C. measured.

| Length | Girth | Spread |
|-----------------|-----------------|-----------------|
| 53 ins. | $16\frac{1}{2}$ | $33\frac{1}{4}$ |
| $51\frac{1}{4}$ | $15\frac{1}{2}$ | 29 |
| 49 | $16\frac{3}{4}$ | — |

Different from the typical race by :

Horns of adult male shorter, their spiral seldom much exceeding one complete circle; the outer front angle in some specimens completely rounded off at the base, but in other examples sharp.

Carruthers (*Unknown Mongolia* p. 570) states that the first and most common variety in Tian-Shan is carelini, in which the horns are more rounded in section than is the case with poli, but only slightly more massive. There is rarely any sign of the great nip-in of poli and never any of the openness of the open type of poli.

The average horn measurements of a fully adult carelini are:

Length 52-55 ins.; girth 15-16 ins.; spread 32-36 ins. Colonel Biddulph picked up a colossal carelini head close to the Narat Pass in the Yuldus, in 1911: it measures: length $70\frac{3}{4}$ ins.; girth $16\frac{1}{2}$ ins. and spread $46\frac{1}{2}$ ins. Judging by the appearance of this remarkable head, which rivals the largest recorded head of poli, the sheep that carried it cannot have died more than three years previously.

Ovis littledalei.

Regarding the body measurements and colour variation of this type of wild sheep, Carruthers is of the opinion that the carelini and littledalei do not differ in any important respect, but that any slight variations are merely due to age and seasonal changes.

It resembles the open poli type in the twist of the horn, but this is considerably shorter in length, although exceeding it in girth. Average length of horn of fully adult ram 50-54 ins., girth 16-17 ins. and spread 44-48 ins.

An imperfectly known variety.

Exists and is apparently considerably rarer than the two last named ones. It approximates to the *O. hodgsoni*, its chief characteristics being great massiveness of horn, short length and narrow spread. Colonel Biddulph who gives information respecting this third variety, measured several heads in the Western Yuldus and found them to average: Length of horn 40-50 ins., girth 16-18 ins. and spread 17-20 ins. As this type of horn appears to differ just as much from the other two as they do from one another, it has every right to be considered a distinct variety (Carruthers, *Unknown Mongolia*, page 571).

Ovis sairensis.

Characters: Size smaller than either *O. ammon* or *O. ammon* or *O. poli*; the height at the shoulders being about 3 ft. 2 ins.

General colour of the upper parts of adult male in summer pelage full rufous-brown, becoming blackish brown on hinder part of head, withers, loins, rump tail, outer surface of thighs, and underparts; face, except muzzle, which is dirty white, grey-brown; legs gradually more and more speckled with white hairs, till from just above the knees and hocks downwards they become white; sides of head, neck and throat speckled brownish-grey, becoming impure white in the middle of the chest. Immature males nearly uniform rufous-brown throughout. Females rufous-brown on the upper parts, with a broad black streak extending from the back of the head to the loins, and widening into a patch in the neighbourhood of the withers; underparts and legs nearly white.

Horns of adult male in some respects intermediate between *ammon* and *poli*, forming a close spiral of rather more than a circle; decidedly more massive than in *poli*, with the front angle rounded off and thus more like the typical race of *ammon*, although considerably smaller; those of immature males distinctly angulated. In the adult male, the horns of which the tips are broken, measure $46\frac{1}{2}$ ins. along the front curve, with a basal girth of about $15\frac{1}{4}$ ins. and a spread of 27 ins. The basal girth of the horns is absolutely greater than in specimen of *Ovis carelini*, with horns of greater length.

Summary of characters of the Wild Sheep races.

By comparing the above-mentioned races of Argali we find that the difference in body size is not great, yet noticeable. Most of the races seem to be of somewhat similar average height. *Ovis ammon* seems however to attain maximum height amongst the Argali and *Ovis sairensis* probably minimum.

The colour variation amongst the races is also on the whole rather inconsiderable. It is to be noted that even within the same race individuals may differ in the matter of size and coloration of the pelage.

The horns show certain differences in length, girth and shape but the fundamental shape is the same.

The difference in habits is little or none. It is therefore not impossible to conclude that they have originated from a common ancestral species.

Furthermore, it seems to me that the very general opinion that Argali are typical high-mountain animals is not free from objections. From studying their habits it seems fairly established that they, as a rule, avoid wild and craggy rock-districts, unless they have been forced there by circumstances or been driven thither by man. On the contrary, the vast rolling highland plateaux, the wide valleys and the lower, grassy slopes of the mountains seem their favourite grounds. When they are fully undisturbed we find them sometimes on the steppes or on the borders of the desert. This impression is shared by such explorers as Przhevalsky, Wallace and Carruthers.

A general study of their habits lead us therefore to believe that the Argali sheep did not originally belong to the mountain animals, but probably inhabited more steppe-like territory, from which they have, by change of climate or other contributory causes, been forced to seek and accustom themselves to the mountainous regions bordering upon their old grazing grounds.

The main cause of this migration is undoubtedly the slow but sure process of desiccation and in-sanding which has taken place and still occurs in Central Asia. It is not impossible that this geological change has much to do with the distribution of and character of the wild sheep races in the regions enumerated above.

Geological and climatological changes in Central Asia.

According to Baron F. von Richthofen the desiccation and in-sanding of the regions in question took the following course, which I shall now briefly describe :

The desert areas which now lie inside the "frame" formed by the various distribution districts of the Argali sheep was during Tertiary time covered by a vast inland-sea, the so-called Han-hai. This sea was connected across the present lake Balkash with the Aralo-Caspian depression, which in its turn stood in connection with the Arctic Ocean.

During a later epoch but still during the Tertiary the Han-hai was, through intervening rise of land, cut off from above connection and thus came to form a central sea or salt-lake without outgoing drainage.

Later on, during a drier climate, the Han-hai evaporated more and more and thus diminished in size until at

last there remained only isolated salt-lakes surrounded by steppe-areas.

Simultaneous with the desiccation of the salt-lakes the periferical parts of the surrounding steppes began to lose their moisture and vegetation, and parallel with this proceeded the invasion of sand.

Thus the sand conquered greater and greater areas until it finally covered the deserts that exist in our time. The more abundant moisture in the mountains and on the high plateaux could still allow the vegetation to thrive and prevent further encroaching of the sand.

That the marginal zones of the desert have not, until a comparatively recent period, lost their moisture is proved by the dried-up remains of forests which still are seen in many localities of the Tarim Basin where—by the way—the most striking proofs of the desiccation of Central Asia are to be observed.

On the steppe-areas which were formed after the drying-up of the Han-hai there lived during the course of time a number of animal species, several of which met their fate and became extinct. This is testified by fossil remains which have been found. These animals were in time succeeded by other species which were probably more suited to the new climatological conditions and which were either able to live on here or were ultimately forced to seek more promising grounds in the mountains and high plateaux in or at the desert.

Whether we can count the Argali to this latter category is a question which may be solved by fossil-hunting expeditions in the steppes and deserts of Central Asia. But the theory does not seem improbable.

We may picture the various phases of the emigration thus: During some of the earlier periods of desiccation, the Argali lived scattered over certain parts of the vast steppe-region; the grass was still abundant round the saltlakes. The rivers and brooks from the mountain ranges still flowed far out on the steppes. Springs and drinkable water still existed in abundance along the margin of the steppe.

The herds on one part of the steppe had connection with flocks in other regions.

But in the course of desiccation conditions changed. The saltlakes and their surroundings lost moisture, the steppe-regions became separated from each other by larger and larger belts of barren ground. Where the lakes lay comparatively close to each other the connection could still be maintained. The Argali herds naturally sought their

grazing grounds each one within its margin of desiccated territory.

But also these large isolated steppes became smaller and the distance between them increased by the growth of sterile sand-belts.

Possibly there began even now at this early stage a certain tendency to race-individuality caused by the isolation.

Later, when these smaller steppes became still more barren and poor in grass, the wild sheep retired along the water courses up towards the nearest mountains, at the margin of the desiccating steppe.

But even these marginal regions became drier and drier still and possibly more insecure (with the advance of man) and the real mountains then became their ultimate refuge.

The herds of each section of the steppe thus wandered into the hills, the northern ones to the north mountains and so on. Here the broad valley containing the water courses became their highways and where no difficult topography stood in their way they spread further along or in the ranges until they found suitable territory.

But even these mountain groups became or were already in many cases isolated from each other through desert formation or through original obstacles such as glacier-filled valleys or belts of country, barren or poor in vegetation. Consequently we may assume that the race-difference, already begun through the isolation on the steppes, was maintained or even more accentuated, until we find it now such as it is.

Except desiccation and such climatological circumstances there are undoubtedly other causes to be taken into account, in dealing with the present distribution of the wild sheep. The invasion of agriculturists in the marginal districts of the desert or the use of these regions for rearing domestic cattle must have resulted in making the sheep retire to the more unapproachable valleys in the interior of the ranges.

With regard to the western districts the probably very early cultivation of the western part of the Tarim Basin resulted in driving certain flocks of wild sheep right up in the high plateaux of the Pamir, others to the less elevated and less distant Tian-Shan and Kuen-Lun. Eastwards in the northern or southern marginal ranges of Gobi and Mongolia we find them at lower altitudes, probably because cultivation began at a later date.

Additional evidence that the wild sheep were originally inhabitants of the plains can be adduced from many

explorers who, when approaching sheep grounds, actually have seen these animals mixed with antelopes and using the same grazing grounds. Now the antelope has never been called anything else than a plain-animal, and the conclusion is obvious.

A possible objection to such a theory of migration may be that the forest belts which undoubtedly grew at the foot of the mountain ranges should have prevented the sheep from going through. To this the author will reply, that in Min-Shan (Kansu) he has personally observed that Blue Sheep (which are supposed to be typical rock-animals) do not hesitate, if hunted or if changing grazing grounds, to wander through forest-belts of ample dimensions.

That Argali has also inhabited the low-lying, great plains of N. China is proved by numerous discoveries of fossil-remains of these animals in loess and gravel-beds on the north-west Chihli plain.

PLANTS FROM PEITAIHO.

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INTRODUCTION.

The following list comprises plants observed within a few miles from Peitaiho during the summer months of 1919. The mountains and foot-hills in the vicinity were not visited. Collections have also been made from the same locality by Mrs. Clemens and Professor I. B. Balfour but the results have not been published.

An herbarium embracing all the species cited, with many others, is in the charge of Professor B. E. Read of the Department of Pharmacology, Peking Union Medical College and can be examined by any one interested. It is hoped that this collection will form a nucleus for one much larger and more complete, to which Botanists are invited to contribute with the object of removing, to a great extent, one of the chief obstacles which render the study of Chinese plants difficult. The knowledge of the name of any plant is a great advance towards a close and more pleasurable intimacy.

Keys for the identification of the families and general are provided, more or less completely, in textbooks, but specific descriptions of many Peitaiho plants are quite inaccessible and it is for this reason that a short description of the most striking differences between the species has been added.

Identifications of duplicates have kindly been furnished by Professor E. S. Sargent of the Arnold Arboretum for the trees and woody plants; by Professor A. S. Hitchcock of the Department of Agriculture Washington, for grasses. Dr. O. Stapf the Keeper of the Herbarium of the Royal Botanic Gardens, Kew, England; Dr. E. D. Merrill of the Philippine Bureau of Science, with Mr. Wm. R. Maxon and Mr. E. P. Killip of the Smithsonian Institute named all other flowering plants, and Mr. Sun Ichi Ono procured identifications of Marine Algae from Professor Kintaro Okamura of Tokyo Imperial University and from Mr. M. Higashi those of some Charas and fresh-water Algae. Without such generous assistance the compilation of this list would have been an impossible task. Acknowledgment is also due to the Peking Union Medical College for laboratory facilities kindly furnished.

N. H. COWDRY.

There has been added to the index the Chinese names both in character and the Romanised, as taken from the dictionary of Botanical Terms published by the "Commercial Press" of Shanghai, for the different natural orders and genera. By so doing it is hoped to extend the usefulness of this excellent collection, many members of which the reader will not find mentioned in the Botanical Dictionary.

Date: December, 1921.

DEPARTMENTS OF PHARMACOLOGY AND ANATOMY,
PEKING UNION MEDICAL COLLEGE.

DIVISION 1.—SPERMATOPHYTA.

SUBDIVISION 1.—ANGIOSPERMAE.

CLASS 1.—DICOTYLEDONES.

Ranunculaceae. Crowfoot Family.

Clematis heracleifolia, DC.—Lotus Hills.—Erect, 2 ft. widely spreading; male flowers light blue; leaves like "Cow Parsnip."

Clematis angustifolia, Jacq.—Banks.—Erect, 18 inches, sparsely branching; flowers white, large; leaves narrow.

Anemone chinensis, Bge.—Dry hills.—5 in., silky-villous; flowers large, dark purple within, May.—“Chinese Anemone.”

Ranunculus acris, L.—Drying places.—Erect, hirsute; flowers yellow.—“Buttercup.”

Ranunculus sceleratus, L.—Drying places.—Erect, smooth; flowers yellow, small.—“Celery leaved Crowfoot.”

Ranunculus pennsylvanicus, L.—Moist places.—Erect, 18 inches; flowers yellow.

Ranunculus Cymbalaria, Pursh.—Margin of ponds.—Low, with runners; leaves crenate; flowers yellow.—“Sea-side Crowfoot.”

Menispermaceae. Moonseed Family.

Cocculus Thunbergii, DC. Rocks.—East Cliff. Climbing; berries dark purple in September.

Menispermum dauricum, DC. Rocks.—East Cliff.—Climbing; leaves peltate.

Cruciferae. Cabbage Family.

Nasturtium globosum, Turcz.—Stream bed.—Erect, 2 ft; flowers yellow; pods almost globular.

Brassica juncea, Hook.—Stream at sand dunes.—Erect, 1 ft; flowers yellow.—“Mustard.”

Capsella Bursa-pastoris, Moench.—Fields. Common weed; pods triangular, flattened.—“Shepherd’s Purse.”

Lepidium ruderales, L.—Fields.—Erect; pod round, flattened.—“Peppergrass.”

Violaceae. Violet Family.

Viola Patrinii, DC.—Banks, common.—Flowers purple; leaves elongate, tapering into margined petioles.

Polygalaceae. Milkwort Family.

Polygala sibirica, D.—Eagle Rock.—Erect, 5 in.; flowers blue, keel fringed; leaves ovate.

Polygala tenuifolia, Willd.—Sand flats.—Flowers blue; leaves narrow.

Caryophyllaceae. Pink Family.

Dianthus chinensis, L.—Banks.—Decumbent, flowers rose-colored, large.—“Chinese Pink.”

Gypsophila acutifolia, Fisch.—Shih T’ou, Shan.—Erect, 14 inches, smooth; flowers white, numerous; leaves narrow, sessile.

Silene aprica, Turcz.—Banks and sand flats.—Erect 12 inches, flowers white.—“Catchfly.”

Spergularia media, G. Don.—Muddy bottoms.—Diffuse, 5 inches, capsule large.—“Sea Spurrey.”

Portulacaceae. Purslane Family.

Portulaca oleracea, L.—Fields.—Prostrate, fleshy; flowers yellow; leaves obovate.—“Purslane.”

Tamariscineae. Tamarisk Family.

Tamarix Pallasii, Desv.—Planted on sand flats.—Shrub; flowers pink.—“Tamarisk.”

Malvaceae. Mallow Family.

Abutilon Avicennae, Gært. —Near cultivation.—Erect; 3 feet; flowers yellow.—“Velvet Leaf.”

Hibiscus Trionum, L.—Sand Flats. Erect, 1 foot; flowers large, sulphur yellow, centre black.—“Flower-of-an-hour.”

Linaceae. Flax Family.

Linum stelleroides, Planch.—Sand flats.—Erect, 14 inches; flowers light pink, blue streaks.

Zygophyllaceae. Caltrop Family.

Tribulus terrestris, L.—Gardens.—Prostrate; flowers yellow; leaves pinnate; fruit prickly.—“Caltrop.”

Geraniaceae. Geranium Family.

Geranium sibiricum, L.—Eagle Rock.—Weak and diffusely branched: leaves palmately divided; flowers light blue almost white.—“Cranesbill.”

Erodium Stephanianum, Willd.—Sandy shores.—Low, leaves pinnately divided; flowers purple.—“Storks-bill.”

Rutaceae. Prickly Ash Family.

Zanthoxylum schinifolium, Sieb and Zucc.—Lotus Hills.—Shrub, 6 ft.; leaves pinnat; flowers, white; branches prickly.

Zanthoxylum Bungei, Planch.—Planted.—Tree; stem with excrescences; leaves pinnate; seed black, in an orange colored capsule.

Simarubaceae. Quassia Family.

Ailanthus glandulosa, Desf.—Lotus Hills.—Tree; fruit winged, with seed in middle.—“Tree of Heaven” “Chinese Sumach.”

Celastraceae. Staff Tree Family.

Euonymus Bungeanus, Maxim.—Lotus Hills.—Low bush; flowers small; pod 3 - 5 lobed “Spindle Tree.”

Celastrus articulatus, Thunb.—East Cliff. Banks.—Low shrub, sometimes climbing; flowers small; Leaves broadly, ovate.

Rhamnaceae. Buckthorn Family.

Zizyphus vulgaris, Lam.—Open ground.—A spiny, stunted form of the “Chinese date.”—“Tsao.”

Vitaceae. Vine Family.

Parthenocissus tricuspidata, Sieb and Zucc.—Light-house Point.—Climbing by adhesive disks.

Ampelopsis aconitifolia, Bge.—Foot Hills.—A vigorous climber about dwellings; leaves dissected.

Ampelopsis humulifolia, Bge.—Lotus Hills.—A vigorous climber; leaves Hop-like.

Leguminosae. Pulse Family.

Crotalaria sessiliflora, L.—Damp, weedy places.—Erect, 8 in., hairy; flowers blue; calyx and pod inflated. “Rattlebox.”

Medicago lupulina, L.—Damp, weedy places.—Pro-cumbent; flowers yellow; pods kidney-form, black when ripe.—“Black Medic.”

Medicago sativa, L.—Gardens.—Flowers bluish-purple; pods coiled.—“Alfalfa”—“Lucerne.”

Melilotus alba, Desr.—Near dwelling.—Flowers white. “White Sweet Clover.”

Melilotus parviflora, Desf.—Sand flats.—Flowers yellow.—“Yellow Sweet Clover.”

Melilotus suaveolens, Ledeb.—Lotus Hills.—Erect and branching; flowers white and light purple; on elongated racemes.

Melilotus (*Trigonella*).....?—Weed sand flats.—Flowers brown and yellow.

Indigofera Kirilowi, Maxim.—Lotus Hills.—Low decumbent; flowers purple, on racemes.—Wistarialike.

Caragana microphylla, Lam.—Lotus Hills.—Low shrub; flowers white and cream, May.

Caragana Chamlagu, Lam.—Rocky hillsides.—Prickly shrub; flowers yellow and brown, May. Gorse-like.

Gueldenstaedtia multiflora, Bge.—Banks.—Low, white-hairy; flowers purple, May.

Astragalus scaberrimus, Bge.—Hills.—Low and creeping, white-hairy; flowers white, often tinged with purple, April.

Oxytropis hirta, Bge.—Lotus Hills.—Low, ascending; flowers purple, on elongated, dense heads.

Aeschynomene indica, L.—Border of ponds.—Erect; flowers greenish-yellow; leaves sensitive.—“Sensitive joint Vetch.”

Lespedeza bicolor, Turcz.—Light-house Point.—Bush, 3 ft.; flowers purple.

- Lespedeza medicaginoides*, Bge.—Sand flats.—Short; flowers yellow and white.
Lespedeza trichocarpa, Pers.—Banks.—Erect; 2 ft.; flowers yellow and white.
Lespedeza juncea, Pers.—Banks.—16 in.; flowers white; leaves narrow, appressed.
Lespedeza virgata, DC.—Lotus Hills.—Low and diffuse; flowers white and purple, on long peduncles.
Lespedeza striata, Hook.—Waste places.—Decumbent; Clover-like; flowers purple-tipped, sessile, Aug.
Lespedeza tomentosa, Sieb.—Banks.—Erect, coarse, with brown appressed hairs; flowers white and crimson, Aug.
Vicia pseudo-orobus, Fisch.—Banks.—Climbing; flowers smaller, purple; leaflets ovate.
Vicia amoena, Fisch.—Banks.—Climbing flowers purple; leaflets oblong-ovate.—“Vetch.”
Vicia tridentata, Bge.—Open ground.—Short, decumbent; flowers large, purple. May.
Vicia unijuga, Al. Br.—Banks.—Stout; flowers purple; leaves in pairs. Aug.
Lathyrus maritimus, Bigel.—Sandy shores.—Sprouting from horizontal rootstocks; flowers purple; leaflets wide.—“Sea Pea.”
Lathyrus palustris, L.—Banks.—Erect; flowers purple; leaflets long and narrow.
Pueraria Thunbergiana, Benth.—Lotus Hills. Rocks.—Brown hairy, with very long, trailing branches; flowers purple.—“Ko.”
Phaseolus chrysanthus, Savi.—Near cultivation.—Weak, climbing; flowers yellow; leaves pinnately trifoliate.
Sophora flavescens, Ait.—Banks.—Upright, 2 ft.; flowers light-yellow.
Sophora japonica, L.—Large tree, common. Flowers light-yellow; leaves pinnate.—“Ch’iao Hwai.”
Cassia mimosoides, L.—Damp places.—Erect; flowers deep yellow, Aug; leaflets many, sensitive.
Albizia Julibrissin, Durazz.—Planted.—Tree; flowers pink, in tassels; leaflets many.—“Silk Flower.”
Rosaceae. Cherry Family.
Prunus humilis, Bge.—Lotus Hills.—Low branching shrub, 2 ft.; flowers pink.—“Cherry.”
Prunus mume, Sieb and Zucc.—Lotus Hills.—Garden.—Tree; fruit hairy.
Prunus tomentosa, Thunb.—East Cliff. Refuse heap.—“Mountain Cherry.”

- Prunus triloba*, Lindl.—Gardens.—Small tree; flowers pink, April; fruit hairy.—“Elm-leaved *Prunus*.”
- Spiraea trilobata*, L.—Hills.—Small shrub, 10 in.; flowers white; leaves 3 lobes.
- Spiraea sorbifolia*, L.—Gardens.—Shrub, 3 ft.; flowers white; leaves pinnate.
- Rubus parvifolius*, L.—East Cliff.—Shrub, 3 ft.; flowers red; leaves white beneath.
- Potentilla anserina*, L.—Damp places.—Spreading by runners; leaves pinnate, white beneath; tubers edible.—“Silver Weed.”
- Potentilla chinensis*, Ser.—Banks.—Stems erect 10 in.; leaves pinnately divided, leaflets toothed, white beneath.
- Potentilla discolor*, Bge.—Banks.—Stout, 6 in.; leaflets 3—5 obtuse, elongate-ovate, white beneath.
- Potentilla flagellaris*, Willd.—Rocks near shore.—Slender, 10 in.; leaves palmately divided.
- Potentilla supina*, L.—Gardens.—A stout weed, 10 in.; stem leafy; leaves pinnate, leaflets cleft, flower small.
- Agrimonia Eupatoria*, L.—Banks.—Stout, hirsute. 20 in.; flowers yellow in a terminal style; leaves interruptedly pinnate.—“Agrimony.”
- Poterium officinale*, Benth.—Banks.—Strong, slender, 18 in.; flowers brownish-red in dense ovoid spikes, Aug; leaves pinnate.—“Great Burnet.”
- Rosa Maximowiczii*, Rogel?—Banks and rocks.—Short; flowers white.
- Pyrus betulaefolia*, Bge.—Near cultivation.—Tree; flowers white; leaves white beneath.

Saxifragaceae. Currant Family.

- Deutzia parviflora*, Bge.—Lotus Hills.—Low shrub, 18 in.; flowers white, large. May; leaves rough on upper surface.

Crassulaceae. Stone-crop Family.

- Kalanchoe*.....?—Banks and rocks.—Thick leaved herbs with yellow flowers. Two or more species.
- Cotyledon*.....?—On dry rocks.—Thick leaves roselike tufts with white flowers in close spikes, Sept.
- Penthorum sedoides*, L.—Moist sand flats.—Erect, 18 in.; flowers yellow on upper surface coiled spike, “Ditch Stonecrop.”

Haloragaceae. Water Milfoil Family.

- Myriophyllum spicatum*, L.—Ponds.—Flowers in terminal spikes.

Myriophyllum verticillatum, L.—Ponds.—Flowers in axils of leaves.

Lythraceae. Loosestrife Family.

Ammania baccifera, L.—Muddy margins of ponds.—Erect. 8 in.; branching; fruit small, axillary.

Lythrum virgatum, L.—Sand flats.—Erect, 18 in.; flowers purple, in an interrupted spike.—“Loosestrife.”

Onagraceae. Evening Primrose Family.

Epilobium palustre, L.—Wet places.—Erect, 22 in.; flowers pink or white. “Willow-herb.”

Jussiaea parviflora, Roxb.—Stream at dunes.—Erect, 2 ft.; branching; flowers yellow and brown.—“Primrose Willow.”

Umbelliferae. Parsley Family.

Bupleurum falcatum, L.—Banks.—Erect, 10 in.; branching; flowers yellow; leaves entire, grass-like.

Cicuta virosa, L.—Weedy pond-sides.—Erect, 2 ft.; flowers white; leaves pinnate, leaflets serrate, narrow.—“Water Hemlock.”—Poisonous.

Phellopterus littoralis, Benth.—Loose sand.—Low; nearly stemless, flowers gray; leaves bi-pinnate; leaflets obovate; root long.

Carum carvi, L.—R. R. track.—Erect, 14 in.; flowers white; leaves with filiform divisions.—“Caraway.”

Caprifoliaceae. Honeysuckle Family.

Lonicera japonica, Thunb.—East Cliff.—Flowers yellow or white. “Honeysuckle.”

Rubiaceae. Bedstraw Family.

Rubia cordifolia, L.—Banks.—Climbing by rough clinging stems; leaves in whorls, heart-shaped at base.—“Madder.”

Galium verum, L.—Banks.—Erect, 18 in.; flowers yellow; leaves linear, in whorls of 6—8.—“Yellow Bedstraw.”

Valerianaceae. Valerian Family.

Patrinia scabiosaefolia Fisch.—Lotus Hills.—30 in.; hirsute; flowers yellow; leaves pinnatifid, segments acute.

Patrinia rupestris, Juss.—Hills.—Erect, 20 in.; flowers deep yellow with elongated leaves at base of clusters.

Compositae. Aster Family.

Eupatorium Lindleyanum, DC.—Sand flats.—Coarse, 20 in.; flowers white or purple; leaves opposite, coarsely cut-toothed.

Aster altiacus, Willd.—Banks.—Branching; flowers white, large; leaves narrow.

- Aster fastigiatus*, Ledeb.—Sand flats.—18 in.; flowers small, white, disk yellow, in dense clusters.
- Aster indicus*, L.—Sand flats.—18 in.; rays white or purple; leaves all entire.
- Aster mongolicus*, Franch.—Sand flats.—18 in.; rays white; basal leaves lobed or toothed.
- Aster Tripolium*, L.—Brackish mud.—Stem swollen at base; rays purple, Aug; leaves entire, narrow.—“Sea Aster.”
- Antennaria*.....?—Open ground.—Low, 6 in.; white-woolly.—“Everlasting flower.”
- Gnaphalium multiceps*, Wall.—Stream at dunes.—Erect, woolly; flowers light yellow, leaves linear.
- Inula ammophila*, Bge.—Sand flats.—Erect. 9 in.; flowers yellow; leaves short, linear, fleshy.
- Inula britannica*, var. *japonica*, Franch.—Banks.—Erect, leafy, coarse; flowers yellow; leaves lanceolate, alternate.
- Inula britannica*, var. *linariaefolia*, Regel.—Sand flats.—Leaves narrower, like Toadflax.
- Xanthium strumarium*, L.—Waste heaps.—Coarse; fruit a prickly bur.—“Cocklebur.”
- Eclipta alba*, Hassk.—Margin of saline ponds.—Slender, 12 in.; Heads on elongated peduncles; rays short, white; leaves opposite.
- Bidens parviflora*, Willd.—Lotus Hills.—Erect, 11 in.; heads narrow, leaves pinnatifid with linear divisions.
- Bidens pilosa*, L. Dry ditch. Similar, but leaflets wide and toothed.
- Myriogyne minuta*, Less.—Mud at margin of pond.—Small 3—4 in.; heads axillary, small, sessile.
- Artemisia apiacea*, Hance.—Lotus Hills.—18 in.; leaves Celery-like.
- Artemisia scoparia*, Wall.—Gardens.—Leaves with capillary divisions.
- Artemisia vestita*, Wall.—Gardens.—Leaves bi-pinnatifid, hoary beneath.
- Artemisia vulgaris*, L.—Waste places.—Leaves pinnatifid, white beneath.—“Mugwort.”
- Senecio campestris*, DC.—Sand flats.—10 in.; white woolly; flowers yellow; radical leaves ovate, entire. “Field Fleabane.”
- Senecio ambraceus*, Turcz.—Banks.—13 in.; flowers yellow. Sept.; leaves, toothed and divided.

- Atractylis ovata*, Thunb.—Banks.—12 in.; flowers dirty-white, Sept.; leaves ovate, sometimes lobed, with spiny margins.
- Cnicus japonicus*, Maxim.—Banks.—25 in.; stout; flowers purple. —“Japanese Thistle.”
- Cnicus arvensis*, L.—Fields.—A weed, not so spiny, 9 in.; flowers pinkish-purple.—“Field Thistle.”
- Saussurea affinis*. Spring.—Fields.—A weed, 18 in.; flowers pink; leaves pinnately lobed.
- Saussurea pectinata*, Bge.—Banks.—Flowers purple, Aug.; leaves pectinate.
- Saussurea japonica*, DC.—Banks.—Flowers purple, smaller; leaves pinnatifid.
- Gerbera anandria*, Sch-Bip.—Banks.—Spring form 4 in.; fall form 18 in.; white-woolly; flowers white or yellowish, tinged with purple in spring; leaves basal, runcinate-pinnatifid.
- Picris hieracoides*, L.—Lotus Hills.—20 in.; flowers yellow; stem rough with hooked bristles. “Ox-tongue.”
- Hieraceum Krameri*, Fr. and Sav.?—Margin of pond.—17 in.;—flowers light yellow; leaves linear.—“Hawkweed”.
- Hypochoeris grandiflora*, Ledeb.—Banks.—8 in.; flowers bright orange, large; leaves denticulate.
- Taraxacum officinale*. Weber.—The common “Dandelion”.
- Lactuca denticulata*, Maxim.—Banks.—Low, 10 in.; flowers yellow; leaves denticulate.
- Lactuca versicolor*, Sch-Bip. —Fields.—A weed, 3-7 in.; flowers white or yellow; leaves various.
- Lactuca repens*, Maxim.—Loose sand.—Flowers bright yellow; leaves ternately lobed, from long horizontal rootstocks.—“Creeping Lettuce.”
- Lactuca*.....?—Sand flats.—Flowers light blue.
- Sonchus lactucoides*, Bge.?—Sand flats, etc.—24 in.; flowers light yellow; leaves runcinate-pinnatifid.
- Scorzonera albicaulis*, Bge. —Fields.—White-woolly; flowers dirty white; leaves linear; seeds large.
- Scorzonera macrosperma*, Turcz. —Banks. —Flowers dandelion-yellow. May.
- Scorzonera mongolica*, Maxim. —Saline sand flats.—Decumbent; flowers light yellow; leaves linear.
- Campanulaceae*. Bluebell Family.
- Platycodon grandiflorus*, A. DC.—Banks.—Erect. 14 in.; flowers deep blue, 1½ in. wide; leaves sessile.

Adenophora remotiflora, Miq.—Banks.—Semi-erect 17, in.; flowers light blue $\frac{4}{5}$ in. long; leaves petiolate.

Adenophora polymorpha, Ledeb.—Banks.—Ascending; flowers blue, $\frac{1}{2}$ in. long; leaves various, denticulate.

Plumbaginaceae. Sea Lavender Family.

Statice bicolor, Bge.—Rocky shore.—Low; flowers numerous, yellow or white; leaves, basal, thick.

Primulaceae. Primrose Family.

Androsace saxifragaefolia, Bge.—Open places.—Low, flowers umbellate, white with greenish-yellow centre; leaves clustered at root. May.

Lysimachia barystachys, Bge.—Banks.—Stout, 18 in.; hairy; flowers white in a dense, terminal, nodding spike.

Glaux maritima, L.—Sand flats.—Low, 2 in.; flowers white, in axils of linear or oblong leaves.—“Sea Milkwort.”

Apocynaceae. Dogbane Family.

Apocynum venetum, L.—Sand flats.—2 ft.; flowers bell-shaped, pink; leaves opposite; sap milky.

Asclepiadaceae. Milkweed Family.

Periploca sepium, Bge.—Banks, near shore.—Branching shrub 2 ft.; flowers $\frac{1}{2}$ in. wide, light purplish, hairy; leaves willow-like; sap milky.

Pycnostelma chinense, Bge.—Banks.—Slender.—12 in.; flowers yellow, leaves grass-like.

Cynanchum pubescens, Bge.—Waste heaps.—Climbing; flowers white; common.

Cynanchum Bungei, Decne.—Lotus Hills.—Climbing; leaves reniform at base, abruptly narrowed to a long point.

Cynanchum sibiricum, R. Br.—Sand flats and banks.—Low sometimes twining; flowers white; leaves narrow.

Cynanchum atratum, Bge.—Sand flats.—Erect, stout, 10 in.; pubescent; flowers deep purplish-brown.

Cynanchum amplexicaule, Hemsl.—Sand flats.—Erect, 2 ft.; smooth; flowers deep purple, in a leafy panicle, a yellow variety common.

Metaplexis japonica, Mak.—Near cultivation.—Twining; flowers white-pubescent, fragrant.

Loganiaceae. Logania Family.

Mitrasacme alsinoides, R. Br.—Moist places in sand flats.—Erect. Slender 1-3 in.; flowers white; leaves opposite.

Gentianaceae. Gentian Family.

Erythraea ramosissima, Pers.—Moist places in sand flats.—Erect. Slender, 7 in.; flowers white, a variety pink.

Gentiana squarrosa, Ledeb.—Sand flats.—Stout, branching from base, 2 in.; flowers light blue or white. May.

Swertia chinensis, Franch.—Banks.—Erect, branching, 8 in.; flowers white with blue stripes. Aug.

Limnanthemum nymphoides, Hoffm. and Link.—Ponds.—Stout, branching; flowers bright yellow, fringed.—“Fringed Water-lily.”

Limnanthemum cristatum, Griesb. ?—Ponds.—Leaves $\frac{3}{4}$ in. broad on long stems which bear near summit, small white flowers.

Boraginaceae. Myosotis Family.

Tournefortia sibirica, L.—Sandy shores.—Creeping by long rootstocks, stout, 8 in.; hirsute; flowers white in terminal clusters.

Echinosperrum anisacanthum, Turcz.—Waste heaps.—Erect, 10 in.; branching, hirsute; nutlets 4, with prickles.—“Stickseed.”

Bothriospermum.....?—Waste heaps, common.—Erect. 12 in.; coarse, rough-hairy flowers light blue on bracted racemes.

Trigonotis peduncularis, Benth.—Common weed.—Low Slender, 10 in.; flowers on naked racemes.

Lithospermum officinale, L.—Banks.—Rough, hirsute; nutlets white, smooth; root with red stain.—“Gromwell”.

Convolvulaceae. Morning Glory Family.

Ipomoea.....?—Gardens.—Smooth, trailing; flowers pink $\frac{9}{10}$ in. long; leaves triangular, halberd-shaped.

Calystegia soldanella, R. Br.—Loose sand.—Creeping by long rootstocks; flowers pink, $1\frac{1}{2}$ in. long; leaves kidney-shaped.—“Sea Convolvulus.”

Calystegia.....?—Gardens.—Twining; flowers pink, $1\frac{3}{4}$ in. long; leaves elongate oval, often lobed at base.

Cuscuta chinensis, Lam.—Sand flats.—Long interlacing yellow stems; flowers and buds white.—“Dodder.”

Cuscuta japonica, Choisy.—Eagle Rock.—Stems thicker, purplish-brown.

Solanaceae. Potato Family.

Solanum nigrum, L.—Gardens.—Low and branching; flowers white, drooping; berries black.—“Black Nightshade.”

Lycium chinese, Mill.—Waste places.—Shrubby, often spiny; flowers yellow or purple; berry ovoid, red.—“Tea Tree” “Matrimony Vine.”

Datura stramonium, L.—Waste heaps.—Rank weed, 2 ft.; flowers white 3 in. long.—“Thorn Apple” “Stramonium.”

Scrophulariaceae. Figwort Family.

Linaria vulgaris, Mill.—Sand flats.—Erect, 10 in.; smooth; flowers yellow; leaves linear.—“Toadflax”

Mazus stachidifolius, Maxim.—Banks.—Erect, 7 in.; flowers blue with two white, spotted streaks.

Limnophila sessiliflora, Blume.—Pond near Eagle Rock.—2½ in.; flowers blue, leaves divided into narrow segments.

Vandellia crustacea, Benth. Stream bed.—Sand flats.—Branching, 5 in.; flowers white; leaves entire, smooth, sessile.

Rehmannia glutinosa, Libosch.—Banks and walls.—Low, brown—hispid, 9 in.; flowers reddish-brown, 1 in. long.—“Ti—Huang.”

Veronica spuria, L.—Rocky banks.—Erect, 20 in.; flowers light blue, small, on a long terminal raceme.

Veronica anagallis, L.—Watery places.—Succulent; flowers light blue on opposite axillary racemes.—“Water Speedwell.”

Siphonostegia chinensis, Benth.—Open ground.—Erect, 4—20 in.; flowers yellow and brown ½ in. long; leaves pinnatifid.

Phtheirospermum chinense, Bge.—Banks.—Erect, 10 in.; flowers pink ½ in., long; leaves pinnatifid.

Orobanchaceae. Broom-rape Family.

Orobanche.....?—Banks.—Erect, fleshy, brownish, 6 in.; flowers blue.—“Broom-rape.”

Lentibulariaceae. Bladderwort Family.

Utricularia flexuosa, Vahl.—Submerged in ponds.—Flowers yellow; leaves many parted, bearing small bladder-like cells.

Verbanaceae. Verbena Family.

Vitex incisa, Lam.—Lotus Hills.—Bush, 4 ft.; flowers light blue odorous; leaves palmately divided.

Vitex ovata, Thunb.—Sandy shore.—Almost prostrate; flowers blue; leaves broadly ovate.

Labiatae. Mint Family.

Plectranthus.....?—Lotus Hills.—Erect, 16 in.; flowers deep-blue; leaves opposite, coarsely toothed.

Mosla punctata, Maxim.—Moist, open places.—Erect, 12 in.; flowers in terminal or axillary spikes.

Mentha arvensis, L.—Moist places.—Weak, freely branching odorous; flowers in axillary clusters.—“Field Mint.”

Lycopus lucidus, Turcz.—Sand flats.—Erect, 20 in.; flowers white, in axillary clusters; leaves coarsely serrate.

Salvia miltiorrhiza, Bge.—Lotus Hills.—Erect, 10 in.; flowers deep purple $\frac{3}{4}$ in. long; leaves pinnate.

Salvia plebeia, R. Br.—Moist places.—Erect 12 in.; flowers small; leaves crenate.

Scutellaria scordifolia, var. *pubescens*, Miq.—Sand flats—Flowers blue; leaves crenate, obtuse.

Scutellaria macrantha, Fisch.—Banks.—Flowers rich blue, Aug.; leaves narrow, entire pointed.

Marrubium incisum, Benth.—Fields.—8 in.; flowers white. April, in axillary whorls; leaves dark green, incised.

Stachys aspera, Michx.—Damp places.—Erect. 20 in.; flowers light pink in terminal spike; leaves linear-lanceolate.

Leonurus macranthus.—Maxim.—Lotus Hills, Erect. 22 in.; flowers white; leaves cut-lobed.

Leonurus sibiricus, L.—Waste heaps.—Erect, rank, branching, 30 in.; flowers reddish-purple, axillary; leaves 3 parted, divisions, cleft or deeply incised.—“Motherwort.”

Amethystea coerulea, L.—Lotus Hills.—Erect, slender, 15 in.; flowers light blue, on elongated pedicels; leaves 3 parted, divisions dentate.

Ajuga genevensis, L.—East Cliff.—Erect, 6 in.; soft pubescent; flowers, blue; leaves obovate.

Plantaginaceae. Plantago Family.

Plantago major, L.—Moist banks.—Stemless, flowers on elongated spikes; leaves broadly oval.—“Great Plantain.”

Plantago depressa, Willd.—Open ground.—Smaller, with leaves broadly lanceolate.

Amarantaceae. Amaranth Family.

Amarantus retroflexus, L.—Waste heaps.—Coarse, 18 in.; flowers inconspicuous, axillary or in terminal spiked clusters; leaves oval.—“Pigweed.”

Chenopodiaceae. Goosefoot Family.

Chenopodium album, L.—Gardens.—Erect, white mealy; leaves various.—“Lamb’s quarters.”

Chenopodium hybridum, L.—Weedy, damp places.—Branching, 3 ft.; basal leaves triangular, taper-pointed, sinuate, with a few prominent teeth.

Chenopodium.....?—East Cliff shore.—Erect, soon branching; leaves obtuse, tapering at base, with red margins.

Kochia Scoparia, Schrad.—Gardens.—Erect, 2 ft.; branching; flowers in axillary clusters; leaves lanceolate to linear.

Suaeda glauca. Bge.—Salt flats.—Fleshy, low; fertile branches ascending, 18 in.; leaves linear.—“Sea Blite.”

Salsola collina, Pall.—Banks near shore.—Leaves awl-shaped, prickly-pointed; fruit an axillary nutlet.—“Saltwort.”

Salicornia fruticosa, L.—Salt flats.—Erect, succulent, 5 in., branched, jointed, leafless.

Atriplex.....?—Sand flats.—Gray; fruit clusters sometimes with sharp spines; leaves linear, spiny pointed.

Polygonaceae. Buckwheat Family.

Polygonum arifolium, L.—Weedy sides of streams.—Stems grooved, angled, with reflexed prickles; leaves halberd-shaped, taper pointed.—“Halberd-leaved Tear-Thumb.”

Polygonum sagittatum, L.—Streams.—Stem 4 angled, with reflexed prickles; leaves oblong-ovate, arrow-shaped.—“Tear-Thumb.”

Polygonum alpinum, All.—Lotus Hills.—2 ft.; branching; flowers white, conspicuous, leaves willow-shaped.

Polygonum mite, Schrank.—Wet places.—1 ft.; flowers pink, in a terminal spike; leaves linear-lanceolate $\frac{1}{5}$ in. wide, sessile.

Polygonum orientale, L.—Moist ground.—Tall, 2 ft.; stout; flowers rose-colored on nodding spikes; leaves ovate, pointed, petioled; sheaths with spreading border.—“Prince’s Feather.”

Polygonum Persicaria, L.—Waste ground.—18 in.; flowers rose-colored on short cylindric spikes; leaves lanceolate, pointed.—“Lady’s Thumb.”

Polygonum Fagopyrum, L.—Near fields, escaped cultivation.—flowers white; leaves heart-shaped.—“Buckwheat.”

Polygonum plebeium. R. Br.—Roadsides.—Prostrate; flowers white or rose-colored; leaves lanceolate.

Polygonum.....?—Sand flats.—Erect. Branching; flowers white, in terminal spikes; leaves linear-lanceolate.

Rumex acetosa, L.?—Lotus Hills.—Erect. 2 ft.; flowers in many naked spikes; lower leaves hastate.

Rumex crispus, L.—Waste heaps.—Erect. 2 ft.; stout, smooth; leaves large, lanceolate with wavy-curved margins.—“Common Dock.”

Rumex.....? Wet places. Weak; flowers whorled, in axils of leaves; lanceolate, obtuse, on long petioles.

Eleagnaceae. Wolf-willow Family.

Eleagnus umbellata, Thunb.—Eagle Rock, Lighthouse Point.—Shrub, 5 ft.; flowers yellow; leaves ovate covered with silvery-scurfy scales.

Santalaceae. Sandalwood Family.

Thesium chinense, Turcz.—Banks.—12 in.; decumbent; flowers yellow; fruit, nut-like, in axils of leaves, covered by the persistent calyx. May.

Euphorbiaceae. Spurge Family.

Euphorbia Esula, L.—Shore.—6 in.; branching; leaves lanceolate to linear.

Euphorbia pekinensis, Rupr.—Banks.—Erect, stout, 11 in.; leaves ovate-lanceolate.

Euphorbia chamaesyce. Bge.—Sand flats.—Prostrate, branching; leaves oblong-ovate.

Securinega fluggeoides. Muell.—East Cliff.—Low branching shrub, 18 in.; male and female flowers on same plant; leaves oblong, tapering at base.

Acalypha australis, L.—Banks.—Erect, 16 in.; branched; leaves lanceolate, serrate, pointed; female flowers axillary, male flowers on terminal spikes.

Urticaceae. Nettle Family.

Ulmus pumila, L.—Planted.—The common Elm.

Hemiptelea (Zelkova) Davidii, Benth.—East Cliff.—Low bush, spreading, often with strong spines leaves ovate, evenly serrate.

Celtis Bungeana, Blume.—East Cliff.—Bush or tree.
Bark smooth; leaves very variable, generally ovate-lanceolate.—“Hackberry.”

Humulus japonicus, Sieb and Zucc.—Waste places.—Climbing; stems prickly downwards; leaves deeply lobed.—“Japanese Hop.”

Cannabis sativa, L.—Borders of fields.—Tall, strong; leaves palmately divided, leaflets coarsely toothed.—“Hemp.”

Morus alba, L.—Gardens.—Tree; leaves heart-shaped, serrate.—“White Mulberry.”

Broussonetia papyrifera, Vent.—Planted.—Tree; leaves irregularly lobed, pubescent.—“Paper Mulberry.”

Juglandaceae. Walnut Family.

Juglans regia, L.—Chinese village.—Tree; leaves pinnate; leaflets 5—7, large.—“Walnut.”

Cupuliferae. Oak Family.

Quercus dentata, Thunb.—Hills.—Tree; leaves wide, obovate, sinuate-lobed.

Quercus serrata, Thun.—Hills.—Tree; leaves oblong or obovate, serrate.

Castanea sativa, Mill.—Lotus Hills. Transplanted.—Tree; leaves oblong-lanceolate, serrate.—“Chestnut.”

Salicaceae. Willow Family.

Salix.....?—Sand flats; transplanted

Populus Simonii, Carr.—Sand flats.—Leaves obovate
Tapering to base.—“Poplar.”

Ceratophyllaceae. Hornwort Family.

Ceratophyllum demersum, L.—Ponds, submerged.—Stems, slender; leaves whorled, dissected into thread-like divisions.

SUB-DIVISION 2.—GYMNOSPERMAE.

Gnetaceae.

Ephedra equisetina, Bge.—East Cliff.—Stiff plant 8 in. jointed, without leaves; male catkins yellow; berries red.

Coniferae. Pine Family.

Pinus sinensis, Benth.—Thunbergii, Parl.—Lotus Hills. The common Pine.

Thuja orientalis, L.—Planted.—“Cedar.” “Arbor Vitae.”

Juniperus chinensis, L.—Planted.—Berries bluish-black. “Juniper.”

CLASS 2.—MONOCOTYLEDONES.

Hydrocharidaceae. Frog-bit Family.

Hydrilla verticillata, Royle.—Ponds, submerged.—
Slender, 10 inches; leaves whorled, undivided.

Orchidaceae.—Orchid Family.

Spiranthes australis, Lindl.—Sand flats.—Erect, 10
inches, flowers rosy, in a spirally twisted raceme.

Habenaria?—Sand flats.—Erect, 20 in.,
flowers white, spur 1 in. long.

Iridaceae. Iris Family.

Iris ventricosa, Pall.—East Cliff.—Solitary, 8 in.,
flowers in pairs, large, pinkish blue. May.

Iris ensata, Thunb.—East Cliff. Sands.—In clumps,
flowers blue.

Iris dichotoma, Pall.—Banks.—Erect, solitary. Stem
forking; flowers small, light purple. Aug.

Dioscoreaceae. Yam Family.

Dioscorea.....?—East Cliff.—Twining, smooth,
leaves cordate at base, pointed.

Liliaceae. Lily Family.

Asparagus davuricus, Fisch.—Banks.—Erect, leaves
linear, crowded.

Asparagus.....?—Sand flats. Leaves or bracts
few.

Polygonatum macropodium, Turcz.—Banks.—Flowers
many, on elongated peduncles.

Polygonatum officinale, All.—Banks.—Flowers on short
peduncles, single.—“Solomon’s Seal.”

Polygonatum sibiricum, Red.—Banks.—Leaves narrow,
whorled.

Hemerocallis minor, Mill.—Banks.—Flowers yellow,
2 in. long. Common.

Anemarrhena asphodeloides, Bge.—Lotus Hills.—
Flowers inconspicuous on an elongated spike. 27 in.,
leaves grass-like, basal.

Allium odorum, L.—Eagle Rock.—16 in., flowers white,
fragrant.

Allium.....? Sand flats. Flowers rose-tinted.
“Garlic.”

Scilla chinensis, Benth.—Banks.—10 in., flowers pink,
on a crowded raceme.

Lilium tigrinum, Ker-Gawl.—Bulbs brought from
Mountains.—Flowers large, red with purple spots.
“Tiger lily.”

Lilium concolor, Salish.—Bulbs from Mountains.—
Flowers red or yellow, petals 1 in. long.

Pontedericeae. Water Hyacinth Family.

Monochoria Korsakowii, Regel.—Ponds.—Flowers rich blue, leaves cordate.

Commelinaceae. Spiderwort Family.

Aneilema Keisak, Hassk. — Damp, weedy places.
Slender, 2 ft., flowers terminal, small, pale purple
leaves narrow.

Commelina communis, L.—Shady places. Slender,
2 ft., flowers bright blue, leaves $3/5$ in. wide. "Day
Flower."

Juncaceae. Rush Family.

Juncus bufonius, L.—Drying ponds.—Slender, 4 in.
leafy, flowers remote, greenish.

Juncus effusus, L.—L.—Ponds.—Scape soft, 16 in.,
flowers in a cluster at side of naked scape.
"Common rush."

Juncus lamprocarpus, L.—Dry stream bed. Leaves
jointed.

Sparganiaceae. Bur-reed Family.

Sparganium affine, schnitzl.—Ponds.—Stem simple,
8 in., flowers white, fruit burlike, leaves erect.

Typhaceae. Cat-tail Family.

Typha minima, Hoppe.—Sand flats.—14 in. high.

Typha angustifolia, L.—Ponds in flats.—4 ft. high.

Aroideae. Arum Family.

Acorus gramineus, Ait.—Sides of stream.—Fruiting
spadix on one side of leaf like scape, leaves sword-
like, root aromatic.—"Chinese Calamus."

Lemnaceae. Duckweed Family.

Lemna polyrhiza, L. Ponds.—Floating.—Leaves round-
obovate $1/5$ in. wide, roots several.

Lemna minor, L. Ponds.—Floating.—Leaves $1/10$ in.
wide. Root single.

Lemna trisulca, L.—Ponds, Submerged.—Leaves ob-
long, remaining connected.

Alismaceae. Arrow-head Family.

Alisma Plantago, Var. *Latifolium*, Kunth.—Ponds.—
Leaves ovate—lanceolate—"Water Plantain."

Alisma Plantago, Var. *angustifolium*. Kunth.—Ponds.
Leaves lanceolate.

Sagittaria sagittifolia, L.—Ponds.—Leaves large, always
arrow-shaped but very variable.—"Arrow-head."

Naiadaceae. Pondweed Family.

- Triglochin palustre*, L.—Damp, weedy places.—Slender 1 ft., scape naked, with pedicellate flowers and elongated fruit, leaves linear.—“Arrow Grass.”
- Potamogeton natans*, L.—Ponds.—Leaves 3 in. long, 1 in. wide, narrowing to base.—“Pondweed.”
- Potamogeton Tepperi*, Arth-Benn.—Ponds.—Leaves 2 in. long, $\frac{3}{4}$ in. wide, obtuse at base.
- Potamogeton Gaudichaudii*, Cham.—Ponds.—Leaves 4 in. long, $\frac{3}{4}$ in. wide, midrib lighter green.
- Potamogeton javanicus*, Hassk.—Ponds.—Slender, floating leaves $\frac{3}{4}$ in. long, $\frac{3}{4}$ in. wide.
- Potamogeton Pusillus*, L.—Ponds.—Slender, all leaves narrow, linear.
- Zannichellia pedicellata*, L.—Ponds. Immersed.—Slender 5 in., leaves linear fruit $\frac{1}{5}$ in. long with prominent beak.
- Zostera marina*, L.—Marine.—Grass-like 2—6 ft., leaves linear $\frac{1}{5}$ in. wide, obtuse.—“Eel Grass,” “Wrack.”
- Zostera marina*, L. form.—Marine.—Smaller, leaves $\frac{1}{10}$ in. wide. *Najas marina*.—Ponds.—Slender, leaves linear, whorled coarsely toothed.

Eriocaulaceae. Pipewort Family.

- Eriocaulon*.....?—Sides of ponds.—Stemless, cellular, leaves as long as the peduncles.
- Eriocaulon*.....?—Same locality.—Peduncles much longer than the leaves.

Cyperaceae. Sedge Family.

- Cyperus Monti*, L.—Margin of ponds. Sand flats.
- Cyperus globosus*, All.—Margin of ponds. East Cliff.
- Cyperus Iris*, L.—Margin of ponds. East Cliff.
- Kyllingia*.....?—Springs.—Slender.
- Eleocharis palustris*, L.—Dry water courses.—Leafless.
- Fimbristylis*.....?—Dry water courses.
- Scirpus carinatus*, Smith.—Ponds.—“Bulrush.”
- Scirpus triqueter*, L.—Ponds.—“Triangular Bulrush.
- Scripus maritimus*, L.—Brackish water.
- Carex stenophylla*, Wahlenb.—Open ground.—Stiff, 3 in. male and female flowers in a terminal head. April.
- Carex pumila*, Thunb.—Barren sand close to dunes.

Many other species of this family are not yet identified.
Gramineae —Grass Family.

Identified by Prof. A. S. Hitchcock of the United States Department of Agriculture.

- Eriochloa villosa* (Thunb). Kunth. Moist places.—Fruit, large, light-colored.
- Isachne australis* R. Br.—Shady, moist places.—(Syntherisma) *Digitaria* Henryi, Rendle.—Roadsides.—“Finger grass.”
- Panicum contractum*, Nees.—Sides of ponds.—Slender.
- Echinochloa Crus-Galli*, L. Seauv.—Damp places.—“Barnyard grass.”
- Chaetochloa italica*, (L.) Scribn.—Millet.
- Chaetochloa viridis*, Beauv.—Broken ground.—“Green Foxtail grass.”
- Pennisetum compressum*, R. Br.—Near pond.—Compressed at base. Awns stiff.
- Arundinella anomala*, Steud.—A very common grass on hillsides.
- Imperata cylindrica*, (L.) Beauv.—Heads white-woolly in May.
- Miscanthus sacchariflorus*, (Maxim.) Hack.—Damp places. Tall with long terminal racemes.
- Spodiopogon sibiricus*. Trin.—Greek Chapel.—Tall. Leaves with white midrib.
- Osterdamia japonica*, (Steud.)—Hitchc.—Open ground. 4 in., with spikelets in a close, purple, head.
- Arthraxon Langsdorffii*. (Trin.), Hochst.—Weedy Ditches.—Leaves very short and wide, fruiting in September.
- Manisuris compressa*. (St.) Kuntze.—Damp localities. Spikelets in excavations of the cylindrical axis.
- Andropogon brevifolius*, Sw.—Stream margins.—Basal leaves obtuse at tip.
- Capillipedium parviflorum*, R. Br.—Stapf—Ravine at Lotus Hills.
- Themeda triandra*, Forsk.—Hillsides.—Turning red in fall. Spikelets compressed.
- Hierochloa glabra*, Trin.—Margin of saline ponds.—“Holy grass.”
- Calamagrostis epigejos*, Roth.—Sand flats.—Very common.—“Small Reed.”
- Capriola dactylon*, (L.) Ktze—Bermuds or “Scotch Grass.”
- Chloris virgata*, Sw.—Spike digitate. Common on Peking walls and roofs.
- Tripogon chinensis*. Hack.—Rock ledges, Shih T’ou Shan. Dense clumps.

- Beckmannia erucaeformis*. (L.)—Host.—Wet ground, Side of R.R. track.
- Leptochloa fusca*. (L.) Kunth.—Sand flats.
- Phragmites communis*, Trin.—Damp places.—Common "Reed."
- Koeleria cristata*. (L.) Pers.—Banks.
- Diplachne serotina chinensis*, Maxim.—Moist, weedy ground.
- Eragrostis cilianensis*, (All.)—Link.—Roadsides.
- Melica Onoei*, Franch and Sav.—Eagle Rock.—Flowering in May.
- Aeluropus littoralis* var. *sinensis*. Debeaux.—Saline flats.
- Poa attenuata* Trin.—Clay banks.
- Puccinellia distans* (L.) Parl.—Moist ground.
- Agropyrum ciliare*. (Trin.) Franch.—Clay banks.—"Couch Grass."
- Elymus pseudo-agropyron*. Trin.
- Elymus arenarius*. L.—On Sand-spit.—"Sea-Lyme Grass."

DIVISION 2.—PTERIDOPHYTA.

Filices. Fern Family.

- Cheilanthes argentea*, Kook.—Sheltered ravines.—Fronds triangular. 2 in. long, the three divisions bi-pinnately cleft at base, white beneath.
- Pellaea geraniaefolia*, Fee.—Sheltered ravines.—Somewhat similar but lower surface almost same color as the upper.
- Woodsia manchuriensis*, Hook.—Shih T'ou Shan. Rock ledges.—Fronds lanceolate, nearly bi-pinnate, fruit dots with white indusium.
- Cyclophorus* (*Polypodium*) *adnascens*, Sw.—Lotus Hills. Rocks.—Fertile frond, 3 in., entire dark green with white dots above, beneath red with the confluent sori.
- Camptosorus sibiricus*, Rupr.—Shih T'ou Shan.—Mature fronds auricled at base and tapering into a long, slender tip which often forms a new plant.—"Walking leaf."
- Ophioglossum japonicum*, Prantl.—Sand flats.—Sterile segment lanceolate 1/5 in. wide, 1 in. long.

Equisetaceae. Horsetail Family.

- Equisetum arvense*, L.—Sand flats.—Sterile stem, 10 in., with whorled, angled branches.

Equisetum ramosissimum, Desf.—Sand flats.—Stems simple or sparingly branched.

Selaginellaceae. *Selaginella* Family.

Selaginella involvens, Spring.—Lotus Hills.—Fronds in rosette form.

Selaginella caulescens, Spring.—Lotus Hills.—Stems 3 in. long, fronds 2 in., root stem matted.

Selaginella mongolica, Rupr.—Lotus Hills.—Prostrate and creeping, moss-like.

Rhizocarpeae.—*Salvia* Family.

Marsilea quadrifolia, L.—Sand flats near pond.—Leaves like "4-leaved clover."

DIVISION 3.—ALGAE.

Identified by Prof. Kintaro Okamura of Tokyo Imperial University.

Ulva pertusa, Kjellm.—Fronde flat, expanded, green.

Ulva.....?—Fronde flat, lanceolate, wavy at margin, green.

Enteromorpha.....?—Fronde tubular, narrow green.

Leathecia difformis, (L.) Aresch.—Fronde globular, hollow, green.

Codium mucronatum, Harv.—Fronde dark green, cylindrical, branched.

Bryopsis plumosa, (Huds.) C. Ag.—Composed of many branching filaments, dark green.

Sargassum fuliginosum, Kg. ?—With many berry-like growths; color yellow. The common floating form.

Sargassum confusum, Ag. ?—Forming leaf-like expansions. The largest species seen.

Chorda filum, L.—Fronde narrow cylindrical, tapering. 3 ft.

Scytosiphon lomentarius, (Lyngb.) J. Ag.—Fronds much smaller, 10 in.; growing generally in groups of few individuals.

Chordaria firma, Gepp.—A black, branching, form, 4 in.; in rock pools.

Chordaria cladsiphon, Ag.—A more slender species, lighter in color. Attached to *Chorda*.

Corallina officinarum, L.—The branching pectinate form. Encrusted and stony.

Rhodomela subfusca, C. Ag.—A black branching form with short linear branchlets.

Dasya punicea. Menegh. ?—Branching; 4 in. covered by a dense growth of minute rose-colored filaments.

Dictyota divaricata, Lmx.—Branching from base; fronds flat, dividing, red.

The following small Chefoo species can also, probably, be found with many others at East Cliff.

Ceramium rubrum, (Huds.) Ag.

Ceramium japonicum, Okam.

Ceramium Boydenii, Gepp.

Gelidium Amansii, Lmx.

Gelidium Amansii, Lmx. f. *radicans*, Okam, mscr.

Gloiopeltis coliformis, Harv.

Nemastoma.....?

Grateloupia filicina, (Wulf.) C. Ag.

Grateloupia tubulosa, Okam.

Laurencia.....?

Pterocladia capillacea, (Hmel.) Born and Thur.

Symphocladia gracilis (Mart.) Fkbg.

Gymnogongrus flabelliformis, Harv.

Haliseris divaricata, Okam.

Polysiphonia.....?

Lomentoria.....?—Allied to *L. articulata*

Endocladia complanata, Harv.

Cladophora.....? Green, filamentous, matted.

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NOTES ON THE AGRICULTURE, BOTANY AND ZOOLOGY OF CHINA

B. W. SKVORTZOW

XLVII.—ON THE PHYTOPLANKTON FROM THE PONDS OF TIENTSIN.

Being in Tientsin in March 17, 1919 a small collection of Algae was gathered by me in the ponds of the Russian Garden and near the brick-kilns.

In this collection were found the following species:

Dinobryon sociale Ehrenb.

Peridinium Marssonii Temm.

Ceratium herundinella (O.F.M.) Schrank.

Trachelomonas volvocina Ehrenb.

Trachelomonas planctonica Swir. var. *ornata* Skvortz
forma (see Fig. 5).

Trachelomonas acuminata (Schmarda) Stein var. *verrucosa*
Teodoresco (see Figs. 1, 2 and 3).

Trachelomonas piscatoris (Fisher) Stokes var. *granulata*
Skvortz.

Trachelomonas verrucosa Stokes var. *minor* Skvortz.

Trachelomonas sp. (see Fig. 7) a species very near to
T. conspersa Pascher.

Euglena acus Ehrenb.

Euglena viridis Ehrenb.

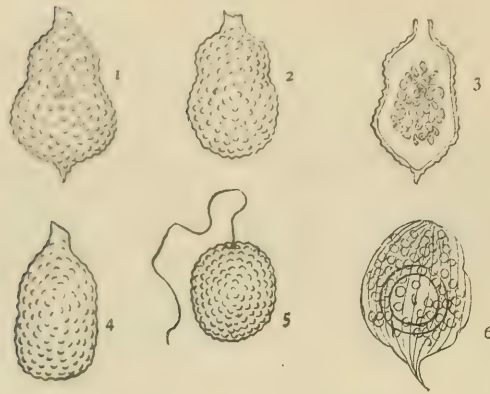
Euglena intermedia (Klebs) Schmidle.

Euglena tripteris (Duj.) Klebs.

Phacus pyrum (Ehrenb.) Stein.

Phacus caudata Hübner.

Phacus sp. (see Fig. 6) a species in size like *Phacus*.
caudata.



XLVII.—ON PHOTOPLANKTON FROM THE PONDS OF TIENTSIN.

Phacus orbicularis Hübner.
Phacus Nordstedtii Lemm.
Phacus acuminata Stokes.
Phacus oscillans Klebs.
Lepocinclis ovum (Ehrenb.) Lemm.
Lepocinclis texta Lemm.
Phacotus lenticularis (Ehrenb.) Stein.
Melosira islandica O. Müll. var. *helvetica* O. Müll.
Cymbella cuspidata Kütz.
Navicula cuspidata Kütz.
Surirella ovalis Bréb.
Oscillaria princeps Nauch.
Stigeoclonium tenue Kütz.

XLVIII.—ON THE WINTER PHYTOPLANKTON OF THE
FISH-PONDS OF FOOCHOW.

Being in Foochow in 1918 some observations were made by me during the winter time on the life of the plankton of the fishponds.

The Fishponds at Foochow are very numerous; they are mostly small in size, but usually very deep. In summer time because of rain fall the water in these ponds has usually a dark muddy colour, only in winter the water was clean and in it were found a rich plankton. In the middle of December up to the end of March most of the ponds were green-blue in colour by an immense growth of Blue-Green Algal *Clathrocystis aeruginosa* Hen. or of a mixture *Euglenaceae* plankton, containing different forms. Only the water of one pond was full of *Euglena sanguinea*.

At Foochow also it was observed that the *Conjugateae* as *Spirogyra*, *Maugeotia*, *Zygnema* and various *Desmidiaceae*

were numerous only during the winter time. As it seems to me the heat and the rains of the summer in this district retard their growth.

Altogether in the plankton were found 92 forms, among which has been discovered new forms. The list of all the organisms is as follows:—

Trachelomonas oblonga Lemm. var. *subglobosa* Lemm.

Trachelemonas oblonga Lemm. var. *granulata* nov. var.
(see Fig. 8). Lorica brown, covered with small rounded knobs. Lorica is of 18 microns of length.

Trachelomonas volvocina Ehrenb.

Trachelomonas volvocina Ehrenb. var. *punctata* Skvortz.

Trachelomonas incerta Lemm. var. *punctata* Skvortz.
(see Fig. 9).

Trachelomonas Swirenko Skvortz.

Trachelomonas sp. (see Fig. 16) a form resembling the type of Tr. Swirenko.

Trachelomonas volgensis Lemm. var. *Treubei* (Wolosz.) Lemm.

Trachelomonas truncata (Lemm.) nob. (= *Trachelomonas oblonga* Lemm. var. *truncata* Lemm.).

Var. *punctata* nov. var. (see Fig. 4).



XLVIII.—ON THE WINTER PHOTOPANKTON OF THE FISHPONDS OF FOOCOW.

EXPLANATION OF THE PLATE.

Fig. 1. *Phacus orbicularis* Hübner var. *undulata* Skvortz.; Fig. 2. *Trachelomonas Stanleii* Skvortz.; Fig. 3. *Lepocinclis Geei* Skvortz.; Fig. 4. *Trachelomonas truncata* (Lemm) Skvortz.; var. *punctata* Skvortz.; Fig. 5. *Phacus curvicauda* Swir. var. *undulata* Skvortz.; Fig. 6. *Phacus longicauda* (Ehrenb.) Duj. var. *Crevicauda* Skvortz.; Fig. 7. *Phacus caudata* Hübner. var. *undulata* Skvortz.; Fig. 8. *Trachelomonas oblonga* Lemm. var. *granulata* Skvortz.; Fig. 9. *Trachelomonas incerta* Lemm. var. *punctata* Skvortz.; Fig. 10. *Trachelomonas regularis* (Lemm.) Skvortz.; var. *asperum* Skvortz.; forma.; Fig. 11. *Trachelomonas Kelloggii* Skvortz.; var. *punctata* nov. var.; Fig. 12. *Trachelomonas Myersii* Skvortz.; Fig. 13. *Trachelomonas minuta* Skvortz.; Fig. 14. var. *gradulata* Skvortz.; Fig. 15. *Trachelomonas fukiensis* Skvortz.; Fig. 16. *Trachelomonas* sp.; Fig. 17. *Trachelomonas proximus* Skvortz.; Fig. 18. *Trachelomonas hexangulata* Swir. var. *sinica* Skvortz.; Fig. 19. *Trachelomonas elongata* Skvortz.

Lorica elongate, brown, dotted, of 14 microns length
Trachelomonas hispida (Perty) Stein.

Trachelomonas hispida (Perty) Stein. var. *puncata* Lemm.

*Trachelomonas Stanleii*¹ nov. sp. (see Fig. 2).

Lorica of the type of *Tz. Westii* Wolosz., brown, smooth, flat, broad, oval, compressed, with the upper part pressed inside, Chlorotophores 8-10. Lorica is of 20 microns.

Trachelomonas fukiensis nov. sp. (see Fig. 15).

Lorica very elongate, brown, covered with little knobs. The lower part is little contracted. The tube-like neck is large, serrated. Chlorophorus numerous, round, discoideis. Lorica is of 75 microns in length.

*Trachelomonas Myersii*² nov. sp. (see Fig. 12).

Lorica brown, roughened, contracted at both ends with a long neck and with a long prickle in the end. Chlorophoris numerous oblong and discoideis. Lorica is 85 microns in length.

Trachelomonas depressa Swir.

Trachelomonas Kelloggii Skvortz. var. *punctata* nov. var. (see Fig. 11).

Lorica brown, dotted, of 32 microns in length.

Trachelomonas proximus nov. sp. (see Fig. 17).

Lorica brown, dotted of the type *Tz. obtuse*. Lorica elongate; the upper part is flattened, the lower is contracted and rounded.

¹Named in honour of Dr. A. Stanley, a well known naturalist in China.

²Named in honour of the late Dr. R. Myers, well known in China and the first investigator of protozoa in China and Formosa.

Trachelomonas hexangulata Swir. var. *sinica* nov. var. (see Fig. 18).

Lorica brown, dotted, in the lower part covered with spines. The tube-like neck is serrated. Lorica is 35 microns in length.

Trachelomonas acuminata (Schmarde) Stein.

Trachelomonas ornburgika Swir. var. *punctata* nov. var. (see Fig. 9).

Lorica brown, dotted, of 28 Microns in length.

Trachelomonas irregularis Swir. var. *minor* Swir.

Trachelomonas regularis (Lemm.) Skvortz. var. *asperum* Skvortz. forma. (see Fig. 10).

Trachelomonas fluviatilis Lemm. var. *levis* (Lemm.) nob. (=Jr. *affinis* var. *levis* Lemm.)

Trachelomonas elongata nov. sp. (see Fig. 19).

Lorica brown, covered with knobs or dots, elongate, with the rounded end. The upper part is contracted and passes directly into the neck. The tube-like neck is serrated.

Trachelomonas minuta nov. sp. (see Fig. 13).

Lorica brown, smooth, oval, contracted at the end. *Trachelomonas valvocina*, *subglobosa* Lemm. differs from this form by its broad round end. Lorica is of 10-15 microns in length and 8-13 microns in breadth.

Trachelomonas minuta nov. sp. var. *granulata* nov. var. (see Fig. 17).

Lorica brown, dotted and covered with round knobs. *Phacus caudata* Hübner. var. *undulata* nov. var. (see Fig. 7). The form with hollow sides, of 73-77 microns in length and 20-23 microns in breadth.

Phacus curvicaude Swir. var. *undulata* nov. var. (see Fig. 5).

Cellule flat broad with hollows in the sides and with one paramilon.

Phacus longicauda (Ehrenb.) Duj. var. *crevicauda* nov. var. (see Fig. 6).

A variety which differs from the typical form by a short tail.

Phacus orbicularis Hübner, var. *undulata* Skvortz. (see Fig. 1).

Phacus longicauda (Ehrenb.) Duj.

Phacus longicauda (Ehrenb.) Duj. var. *torta* Lemm.

Phacus oscillans Klebs.

Phacus pyrum (Ehrenb.) Stein.

Phacus parvula Klebs.

Phacus pleuronectes (O.F.M.) Duj.

Phacus acuminata Stokes.

Phacus alata Klebs var. *Lemmermanni* Swir.

*Lepocinclis Geei*¹ nov. sp. (see Fig. 5).

Cellule oblong contracted from the middle up to the upper part, the lower part is rounded with a short spine in the end. The surface is longitudinally striated. Chlorophoris small, numerous, discoiders. The length—32 microns.

Lepocinclis fusiformis (Carter) Lemm.

Lepocinclis ovum (Ehrenb.) Lemm.

Lepocinclis ovum (Ehrenb.) Lemm var. *palatina* Lemm.

Lepocinclis Steinii Lemm.

Lepocinclis Marssonii Lemm.

Euglena oxyuris Schmarda.

Euglena acutissima Lemm.

Euglena sanguinea Ehrenb.

Euglena fusca. (Klebs) Lemm.

Euglena acus Ehrenb.

Euglena caudata Hübner.

Euglena tripteris (Duj.) Klebs.

Glenodinium pulvisculus.

Peridium inconspicuum Lemm. var. *armatum* Lemm.

Vacuolaria virescens Cienk.

Eudorina elegans Ehrenb.

Pandorina morum Bory.

Chlamidomonas sp.

Phacotus lenticularis (Ehrenb.) Stein.

Melosira italica Kütz.

Melosira islandica O. Müll subsp. *helvetica* O. Müll.

Cyclotella Meneghiana Kütz.

Synedra actinastroides Lemm. var. *opolinensis* Lemm.

Scenedesmus bijugatus. (Turp.) Kütz.

Scenedesmus apolinensis Richter.

Scenedesmus quadricuada (Turp.) Brèb.

Scenedesmus quadricuada (Turp.) Brèb. var. *horridus* Kirchn.

Scenedesmus acuminatus (Tagerh.) Chod.

Scenedesmus denticulatus Lagerh.

Sphaerocystis Schroeteri Chodat.

Pediastrum Simplex (Meyen) Lemm. var. *radiatus* Lemm.

Pediastrum Boryanum (Turp.) Menegh.

var. *longicorne* Rensch.

var. *cruciatum* Kütz.

Pediastrum duplex Meyen var. *genuinum* A. Br.

Actinastrum Hantzschii Lagerh.

¹Named in honour of Mr. N. Gist Gee, a well known naturalist in China.

Tetraedron regulorte Kütz.
Kirchneriella contorta (Schmidle) Bohlin.
Crucigenia triangularis Chodet.
Ankistrodesmus falcatus (Corda) Ralfs.
 var. *aciculare* (Corda) Ralfs.
 var. *fusiforme* (Corda) Ralfs.
Clathrocystis aeruginosa Hen.
Merismopedia tenuissima Lemm.

XLIX.—ON SOME FRESHWATER ALGAE, COLLECTED BY
MR. C. R. KELLOGG IN HOKCHIANG, FUKIEN.

Mr. C. R. Kellogg, who was at the end of February 1919 in Kokchiang, 70 miles from Foochow, kindly gathered for me a collection of Algae from the rice fields. When examined in the laboratory of the Anglo-Chinese College at Foochow this collection was found to contain the following species:

Melosica varians Ag.
Tabellaria fenestrata (Lynb.) Kütz.
Synedra acus Kütz.
Cocconers pediculus Ehrenb.
Cymbella lanceolata Ehrenb.
Tetracyclus lacusbris Ralfs.
Merismopedia glauca (Ehrenb.) Näg.
Trachelomonas volvocina Ehrenb.
Peridinium tabulatum (Ehrenb.) Clap. et Lachnv.
Pandorina morum Bory.
Eudouna elegans Ehrenb.
Desmidium Swartzii Ag.
Hyalotheca dissiliens Bréb.
Gymnozyga Brebissonii Nordst.
Closterium moniliferum (Bory) Ehrenb.
Microthamnium Kützingianum Näg.
Bulbochacte sp.
Oedogonium sp.
Pediastrum Boryanum (Turp.) Menegh. var. *granulatum*
 (Kütz.) A. Br.
Scenedesmus quadricauda (Turp.) Bréb. *typicus*.
Maugeotia genuflexa (Dil.) Ag.

A PARTIAL BIBLIOGRAPHY OF CHINESE BIRDS.

By J. H. RILEY AND Dr. C. W. RICHMOND
of the SMITHSONIAN INSTITUTION.

This partial bibliography of Chinese Birds was largely compiled by Mr. Riley, for personal convenience, without any attempt at bibliographical style, and supplemented by Dr. Charles W. Richmond, who says, "This bibliography is doubtless quite incomplete, but it contains much that has been written on the birds of China and countries bordering it. Some of the titles, such as 'New Species of Bulbuls,' do not indicate any relationships to China, but they contain descriptions of Chinese species or discuss Chinese species. Some of the general works, like the 'British Museum Catalogue of Birds,' have been omitted." Mr. A. de C. Sowerby thinks it will be of the greatest value, and so we publish it for the benefit of our readers.—*Editor.*

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CHRIST IN THE "LI TAI SHEN HSIEN T'UNG CHIEN."

A Letter from Dr. H. A. Giles

Mr. Werner finishes off an interesting paper in the *Journal* for 1921, pp. 186—188, with a note on "Christ and Two Nestorian Priests," a picture which I reproduced several years ago in "An Introduction to the History of Chinese Pictorial Art," and again in *Adversaria Sinica*, Series I, p. 27, with further arguments, pp. 215 and 300, to support my views. Mr. Werner declares that he has "no wish to revive the controversy;" and then, consenting like Donna Julia, proceeds to fill more than two closely-printed pages with "the following reasons," which are about as controversial as he could make them. Personally, I am quite pleased to revive the controversy, in the hope that the question may possibly be settled once and for all, as the balance of evidence may determine.

Mr. Werner says "there is no record showing that Christ was partially bald." What he mistakes for baldness, and also for the *ushnīṣa* is the tonsure which was a characteristic of Nestorian priests, as well as the beard. This we learn from no lesser authority than the Nestorian Tablet: 存髮削頂 they grow the beard and shave the crown. As to the curly beard which Mr. Werner says "does resemble that shown in portraits of the Buddha," I have dealt with that in *Adversaria Sinica*, p. 300, and it is tiresome to have to repeat old statements which have not been refuted. So with "essential points of resemblance to Buddhist originals," considering how the Nestorians tried to embody Buddhism in the special form of Christianity which they offered to the Chinese. As to the dissimilarity of other "portraits of Christ," I presume that Mr. Werner refers to western examples, which are quite dissimilar among themselves and have no bearing on the point at issue. The oldest known portrait of Christ, barring the present bone of contention which could hardly profess to be a likeness, is here at

Cambridge, in the library of Trinity College, and is attributed to the 8th century. Mr. Werner gives many reasons why the shorter priest (or Lao Tzū) should not be kneeling. If not, he would be a mere dwarf compared with the over topping figure behind him. As to the toe-points, I will retire incontinently from the fray, and leave Mr. Werner to fight it out with one of the most distinguished archaeologists in the United Kingdom, Miss Jane Harrison, Hon. LL.D. Hon. D. Litt., Lecturer in Classical Archaeology, etc., who favoured me with the following opinion:—"The kneeling attitude of the lower figure convinces me. I took the figure as kneeling before I read the text, or noticed the visible toes."

All the the above details, however, weigh like chaff in the balance compared with the real *crux* of the question, which has been studiously burked, shirked, or evaded, by every previous disputant, and now by Mr. Werner himself. This *crux* is the accurate translation of the descriptive label attached to the picture: 函三爲一. Opponents say that these words simply mean that *the three Religions*, that is, Buddhism, Confucianism, and Taoism, *are one*,—in their ultimate aim, the regeneration of man kind. In reply to this it may be stated, not for the first time, that there is a stock phrase covering exactly the sense required which has been used for many centuries and might well have been applied here, had the composition of the picture allowed of such a meaning. This of course is the well known sentence, 三教爲一 in which there is no difficulty as regards the subject of "are one;" whereas we search in vain for any subject of 函, beyond something we find in the picture itself, namely, the segregation of one of the three figures, in striking contrast with the aggregation of the other two. For me, that isolated figure becomes the subject of 函; and for me, therefore, the true translation is that the said figure "Envelopes Three, being One." Who could the person be, of whom such a statement could be made? This view seems to me to be fully borne out by a sentence in a 後序 postscript to the work in which the picture appears. The writer of this enlarges on the wonderful variety of pictures brought together; and among these he particularly mentions, as something out of the way, the very illustration now in question: 有一函三者, which can only mean, "There is a One who envelopes Three" with no suggestion whatever of three religions having the same aim.

Mr. Werner ended his paper with "hilarious" laughter at my expense in reference to the "toe-points touched in." I have a presentiment that I shall laugh last. Discoveries

are always rightly received with caution; *e.g.* the Ireland and Shapira forgeries. Sometimes the caution is overdone; *e.g.* the Nestorian Tablet, with the denunciations of Voltaire, Renan, and of several distinguished Chinese scholars. Meanwhile, I may be allowed a little friendly giggle at the amazing suggestion by Mr. Werner that, with reference to the isolation of one of the three figures, "Buddha is given precedence out of ceremonial deference, because his religion is foreign to China and he occupies in the picture the position of a 'guest' or 'stranger' in China." *Solvuntur tabulae!*

HERBERT A. GILES.

21 March, 1922.

MR. WERNER'S REPLY.

It is true that I had, and have, "no wish to revive the controversy." When I stated in my paper in the *Journal* for 1921 that the picture of Christ I reproduced from the *Li tai shên hsien t'ung chien* "added another to the existing portraits of Christ," it would, in default of reference to Professor H. A. Giles' alleged "figure," "picture," or "early portrait," have been supposed that I agreed with the theory he has been so laboriously trying to substantiate. Had I not appended to my statement my reasons for making it, these would only have been called for later. My action was therefore quite consistent with the absence of a wish to revive the controversy. It was purely a defensive measure, intended to preclude the mistake of including me among the few who have adopted Professor Giles' view.

The absence of the wish has a further cause. I prefer to have the supreme joy of residence and research in Peking disturbed by controversy only when it is likely to lead to some positive and useful result, without marring friendship with fellow workers in the same field. Discussions of the kind which occurred in the pages of the old *China Review* detract, in my experience, from the pleasure of perusing that interesting if now somewhat antiquated periodical. For toilers in the most fascinating realm of sinology I have always entertained a feeling of brotherly lovingkindness, holding that "rival" (I prefer the adjective "co-operating" as long as no socialistic meaning is attached to it) sinologists should be regarded as friends to be cherished, not as enemies to be killed. After all—unless our work is indifferent or we are destructionists or exterminationists—we are all builders,

not completers, and, however good the building, the work of every one of us is destined to seem antiquated, perhaps even quaint, in time. Even now the *Tzŭ êrh chi* of our sinological childhood must be regarded rather as an interesting historical relic than as a useful text-book by those who, from the vantage-ground of residence in China, can see with their own eyes the progress that has been made. A kaiserly attitude or manner (objectionable in any case) would therefore be particularly inappropriate in a domain of which we have as yet explored only the merest fringe and are never likely to conquer the whole territory.

A recent writer in the *New China Review*, not the first to do so, refers to the "assurance" (the more colloquial term "cocksureness" has also been used) of Professor Giles, and this assurance seems to me to be a serious if not insuperable obstacle to any final and satisfactory agreement on this matter. The impression left on my mind by perusal of his articles was that, having broached a theory which had excited keen opposition and even ridicule, he had determined to carry his point somehow or other, and in so doing had only got deeper and deeper into the mire. First, it was simply "a figure of Christ." Now, it is Christ disguised as a Nestorian priest. First, it was "a Nestorian priest kneeling at his feet." Now, after the toe-points have been pointed out, these have been "touched in," because he, who resembles Lao Tzŭ, "was mistaken for Confucius" (!), when someone much more like Confucius was standing just behind him! (Would any Chinese, alive or dead, make the very tall Confucius into a dwarf?) Terms, also, are strained in favour of Professor Giles' view and against that of his opponents. For instance, the use of the word "dwarf" as compared with the "overtopping" figure is quite unjustifiable in relation to the figures of Lao Tzŭ (or the "Nestorian priest" in front) and Confucius (or the "Nestorian priest" behind). The three figures in the picture differ from each other in height only by one-eighth of an inch; they measure exactly one inch and four—, one inch and five—, and one inch and six-eighths respectively. The difference between the shortest and the tallest figure is one quarter of an inch. It was evidently therefore the intention of the artist, engraver, or moulder to indicate only a slight discrepancy in stature, though, of course, the question of relative height may have nothing to do with the matter at all. Now it is well known that Confucius, the son of an unusually tall father, was, in modern measurement, about seven feet in height. This would make the shorter figure 6 feet 6 inches in height—by

no means a dwarf! As I hold the figure in the background to be that of Confucius, I am entitled to regard the "dwarf" as being of this height. But taking (to be perfectly fair) the middle figure as being of the average Chinese height of say 5 feet 4 inches, the three figures would be 5 feet 9 inches, 5 feet 4 inches, and 4 feet 11 inches in height respectively. A difference of five inches from the average height does not warrant the application of the term "dwarf" to the shorter one. Further, the proportionate difference between Buddha (or Christ) and Confucius (or the taller of the two Nestorian priests) is exactly the same as between the latter and Lao Tzū (or the shorter of the two Nestorian priests); yet it is not therefore correct to describe Confucius as a dwarf in comparison with Buddha. Moreover, if the shorter figure is kneeling and is still just about five feet in height, he would indeed be a gaint when he stood up! If he were a Westerner he might be even still more of a giant. If Professor Giles, *more suo*, should allege that his Nestorian priest *was* a giant—say seven feet or more in height—or that, having no lower legs, he could not do anything but kneel, that would not surprise me: it would only add another to the straws he has been clutching at to save his theory!

My acquaintance, though slight, with Miss Jane Harrison, impressed me with the fact—a fact which has impressed the scientific and literary world—of her profound knowledge of the Greek language, literature, and art, but it did not impress me with the idea that she was an authority on little Nestorian or Chinese toe-points. (By what perverted law of chivalry Professor Giles acquires a right thus incontinently to sidetrack himself and leave the lonely lady to assume the gloves in order to protect, against a man, his little toepoints, is not altogether clear.) Her statement, made in reply to Professor Giles' query, that she "took the figure as kneeling," made before more careful scrutiny disclosed her mistake, seems to indicate a want of careful observation which vitiates her conclusion. Perhaps a further impartial inspection would have impressed her with the striking resemblance of the three figures to Buddha, Confucius, and Lao Tzū. But neither she nor Professor Giles has attempted to explain the absence of the lower legs (a point in my paper which Professor Giles burkes), or why both figures are not kneeling in the presence of Christ, or whether the toe-point of the other "Nestorian priest" has also been touched in, or why, if Christ is dressed as a Nestorian priest, his clothing does not resemble that of the other two "Nes-

torian priests," or whether, anyhow, it was or is the custom of Nestorian priests to kneel when they deliver blessings, holding a Taoist scroll in one hand and putting the other in the characteristic attitude of Lao Tzŭ with his two straightened fingers, symbolical of the Taoist art of the magical two-edged sword (劍訣), or whether, when they knelt to bless, they kept their knees a foot and a half to two feet or more apart. It seems to me that if that amputated, kneeling figure were to adopt that extremely uncomfortable and irreverent attitude in order to deliver a blessing, he would—either before, during, or after (probably before) the delivery—topple over on to his nose, carrying Professor Giles' theory with him!

If, as seems unquestionable, Lao Tzŭ is thus identified, that would, apart from all other considerations, settle the whole issue.

As regards the emphasis I laid on the main characteristics of the portraits or pictures of Christ, it is a little difficult to compare satisfactorily with them what was at first said to be "one more early portrait of Christ," but is now said to be "hardly a likeness" and Christ in the dress of a Nestorian priest. Had not this been an afterthought as a result of the criticism of foreign and native scholars it surely would have been wise to have saved much writing by mentioning it in the first instance. As it is, if Professor Giles sees in this picture a Nestorian coiffure on the head of Christ and I and others see the *ushnīsha* on the head of Buddha, there is no hope of agreement. Nor do I agree with the view he takes regarding the "similarity" between the "Christ" on p. 27 and the "barbarian of the West" on p. 301 (note that the *lo-han* is "replying to," not "blessing," the "barbarian"), nor regarding the existing portraits of Christ, especially the points I referred to of the thick head of hair of Christ with the parting down the middle, the curly beard, and the general dissimilarity between such collections of pictures as those in *The Christ Face in Art* and this old engraving. If the "bone of contention" were intended to be "an early portrait of Christ" these characteristics would surely have been indicated, if not emphasized. It was at least unfortunate that the artist, if he intended to depict Christ and two Nestorian priests, should have made them so unmistakably like Buddha, Lao Tzŭ, and Confucius! If every characteristic of Christ is omitted or disguised in a picture which "can hardly profess to be a likeness," there is nothing left of Christ at all! Professor Giles having now completely dechristified Christ by taking

from him his essential thick Nazarite hair and characteristic beard and clothing him in Nestorian garments, I am forced to ask what remains by which to identify this figure as Christ? Is it the shape of the eyes, the nose, the feet, or the toes? Again I see no hope of agreement.

Coming now to the motto 函三爲一 on the back of the ink-tablet, it is quite unthinkable that the word 三 "three" in the motto should not be considered as referring to the three figures in the picture. The three who are 函-ed into one are these three persons or what they represent. To admit Professor Giles' contention would involve the conclusion that the Holy Trinity is or was composed of Christ and two Nestorian priests! The usual phrase for the Trinity is 三位一體 and this meaning does not seem to be conveyed by 函三爲一. As to the subject of 函, the gist of a long, elaborate explanation by a native scholar is that the two circles surrounding the picture (representing respectively heaven and earth—all that is comprehended in the term 世界) are to be taken as embracing and unifying the three doctrines personified in it. (This view derives support from the sentence in the 後序 referred to by Professor Giles, which evidently refers to the illustration itself.) According to this explanation, the picture is composed of 天, 地, 人, 日, and 月, and these, when personified (the human figures standing for the religions or doctrines they represent), fall naturally into the places assigned them in the picture, those places corresponding to the positions in the well-known 陰陽 diagram (sometimes called the "duplex fishes") composed of the two concentric circles representing 天 (乾) and 地 (坤), and of 月 (僧 Buddhism), 日 (道 Taoism), and 人 (儒 Confucianism). The order is determined by the priority (of origin, not of arrival in China) of Buddhism to the other two, 儒出於道道出於佛 (Note also that the order is 僧道儒 not 儒道僧 or 道儒僧 etc. It is also obvious that Confucius in the picture is listening to Lao Tzŭ, not worshipping Christ—or Buddha—as maintained by Professor Giles). This diagram was evidently the ground-plan of the picture in question, and the above explanation (which also shows the *raison d'être* of the two concentric circles—not hitherto explained—instead of a single-line rectangular border) would seem to be the most reasonable and probable solution of the problem.

This explanation differs somewhat from the one (also founded on discussions with learned native scholars) given in my paper, but it does not differ in the essential facts, namely, that the figure in question is one of Buddha, and that

Buddha (standing for Buddhism) is here rightly placed in a position of prominence. All my Chinese friends strenuously insist that the 三 "three" cannot refer to one of the figures only, that the figures are those of Lao Tzŭ, Confucius, and Buddha, and none will admit that the "Buddha" is "Christ."

Professor Giles' *solvuntur tabulæ* is useless, for there is no "President" to decide the issue. But, if any *suffragium* were possible, the majority of China's four hundred millions (who may be supposed to know their own sages and gods when they see them—perhaps more intimately than many Western peoples know theirs) would certainly not be on Professor Giles' side. As far as I can see, the majority of Western scholars would not be on his side either. The matter, in any case, surely does not possess the importance which Professor Giles seems to attach to it. Even if he had discovered a Chinese outline drawing of Christ so ill-disguised as a Nestorian priest as to be mistaken by most people for Buddha and attended by two Nestorian priests closely resembling Lao Tzŭ and Confucius, that could hardly warrant so much ado. All the Chinese and Western scholars I have consulted are dead against him. The "hilarious laughter," by the way, to which Professor Giles replies with his *tu quoque* "friendly giggle," was theirs, not mine, and though hilarious laughter might effectually drown a giggle, I have no desire to engage in so childish a competition as striving for the "last word" or the "last laugh." I would prefer to smile and shake hands, if there were any prospect of agreement. If it is to be a matter of laughter rather than giggles, surely the sentence on p. 36: "No Chinese artist could have painted such a picture without infinite risk to his valued skin," etc., is enough to excite it in no small degree! But I can discern no profitable future for the discussion, and have no wish to spend further time in continuing it with a stiffnecked controversialist who dubs as "absurd" an explanation supported by many Chinese and Western scholars, who have given their opinions independently, unless (which seems extremely unlikely) any useful object is to be attained, and unless, there being a reasonable prospect of agreement, the discussion is carried on in a spirit of sweet reasonableness and constructive lovingkindness. As it is, nothing which Professor Giles has said hitherto, and nothing which he says here, causes me to change my conviction that he is mistaken in his interpretation of the picture and its motto. While I hold that there can rightly be none but a negative answer to his question, "Art Thou the Christ?"

I yet prefer to agree to differ from so eminent a sinologist in a friendly manner: there is no occasion (following the historical precedent) to "draw a line on the ground" (畫地絕交)!

E. T. C. WERNER.

RECORDS OF THE GEOLOGICAL COMMITTEE OF THE RUSSIAN FAR EAST.

No. 16. *P. P. Goudkoff*. A scheme of instructions for the sampling and registration of materials relative to ore deposits. No. 14. *E. E. Ahnert*. Annual report on geological research in 1919. No. 11. *A. N. Kryshstofovich*. Some tertiary plants of Possiet-Bay. No. 15. *A. N. Kryshstofovich*. Tertiary plants from Amagu river in Primorsky Province. No. 12. *I. Hayasaka*. On a collection of the cretaceous fauna from Russian Sakhalin. No. 13. *A. N. Kryshstofovich*. Report on the results of studies in Japan:—

The Geological Committee of the Russian Far East, residing in Vladivostok, in spite of the very difficult conditions in which the Russian scientists have to work at present, endeavours to promote by all ways and means a scientific gathering of materials concerning geology and useful minerals of the Russian Far East and embraces in its explorations the Island Sakhalin and Japan. The collected materials are being published by the Committee and 24 books have appeared up to the present moment. The titles of some of them are given in the beginning of this article.

P. P. Goudkoff designed a scheme of instructions for recording of materials relative to ore deposits. For valuation of probable stocks of a mineral it is necessary to have an idea in which way the formation of this ore deposit took place and what were the conditions which caused the appearance of special geological and chemical properties being typical for the said deposit. In consideration of the above, besides a detailed description of an ore deposit itself, information regarding a general geological structure of the district, in which the ore deposits have been discovered, should be obtained and these practical data will indicate the signs, facilitating the task of a new search for minerals in this district. The author has worked out a series of questions, the answers to which must be especially collected by the members of the Geological Committee and published periodically. The realization of such a scheme would be, without doubt, very useful as much to the practical mining men as to the scientists.

E. E. Ahnert in his annual report of geological research in 1919 gives a circumstantial account of the results of

geological explorations in the district of the Possiet-Bay, near Novo-Kievsk. He describes large deposits of brown coal, and mentions some silver lead ore and gold placer deposits. In order to show the quality of the coal, he gives its analysis, showing also the heating value of this mineral fuel. E. E. Ahnert has collected here some well preserved impressions of fossil flora, belonging to Tertiary geological period and A. N. Kryshstofovich has defined them and gives us a detailed description of them in the book "Some Tertiary plants of Possiet-Bay." In addition he draws a historical sketch of the study of the fossil flora found on the Pacific Coast and in the Russian Far East and quotes the literature referring to this question. A. N. Kryshstofovich has also studied and described some petrified tertiary plants from the river Amagu in Primorsky Province, and found a collection of fossil fauna in the Russian Sakhalin, near the mouth of the river Hoya. These petrified mollusks have been investigated by Dr. Hayasaka and the results published by the Committee in the book: "On a collection of the cretaceous fauna from Russian Sakhalin." The discovery of these representatives of the Chalk stratum is of an interest, as their presence discloses the age of some doubtful layers.

A. N. Kryshstofovich undertook during his visit to Japan some geological studies of the fossils of this country and gives some information about this subject in his "Report on the results of studies in Japan in 1919-1920."

All the said editions represent a valuable donation to the scientific literature about geology of the Far East, having also a practical interest for the mining men. The books are neatly printed and furnished with tables containing excellently executed photographs of the fossil remains.

Bearing in mind that practically the vast area of the Russian Far East has not been systematically explored from a geological standpoint of view and the discoveries, which have been of benefit to the development of mining enterprise, have been mostly of an accidental character, we must admit that any explorations, being led according to a plan by specialists, are of a particular value and it should not be forgotten that the work of the Geological Committee of the Russian Far East must be done under specially grave conditions.

A. B.

OBITUARIES

SIR E. D. H. FRASER, K.C.M.G.

The Society has suffered a great loss by the death of Sir Everard Fraser, its President for many years. The Officers and those who were more intimately connected with him deeply mourn the death of such a scholar and friend. The Resolution passed at the Public Meeting and recorded in the Proceedings give a token of the respect and affection with which he was regarded by his fellow members.

Everard Duncan Home Fraser was born on February 17, 1859, at Protobello, near Edinburgh, being the son of Lieut.-Col. R. W. Fraser, and he was educated at Aberdeen. Passing a competitive examination, he was appointed a student interpreter in China on March 10, 1880, being promoted Acting Consul at Foochow in 1886 and at Kiukiang in 1889. In June of the latter year he went to Ichang as Acting Consul, remaining there until January 11, 1891, when he was appointed Acting Vice-Consul at Chemulpo, Korea, holding that post until 1892 when he went, in July, to Chungking as Acting Consul. On December 1, 1893 he was promoted First Assistant, and was Vice-Consul at Canton from December 13, 1895 to October 26, 1897, and Acting Consul there from December 14, 1895 to May 27, 1897. He was promoted to the H.M. Vice-Consul at Pagoda Island on September 27, 1897, and Consul at Chinkiang on May 13, 1899. In 1898 and 1899 he was Acting Consul at Foochow. On January 1, 1901, he was honoured with a C.M.G., and became Acting Consul-General at Hankow on January 24, 1900, being promoted Consul-General at that port on July 1, 1901.

On January 20, 1911, he was transferred to Shanghai as Consul-General, which post he held with honour up to his death. In 1911 he received the Coronation Medal and was created a Knight Commander of the Order of St. Michael and St. George on June 14, 1912. At the time of his death Sir Everard Fraser was Senior Consul in Shanghai and, therefore, Chairman of the Consular Body.

At the memorial service Bishop Molony said, "Sir Everard Fraser was a noble man and a great Consul. He was straight and tall as the pine trees of his native land, his will and purpose were as strong as the granite of the

Grampians, his companionship was as fragrant as the heather on the moors of Scotland. What made him such a man as he was? In his youth high ideals and hardness of circumstances framed his character. In manhood he set before him at all times devotion to his duty and the years of his later life were fortified by a strong religious faith.

He was one of the best and most accomplished students of the Chinese language. His knowledge of this literature was wide and his researches many. It is unfortunate for students that Sir Everard Fraser did not publish more than he did. Possibly his modesty and reserve on the one hand and his high standard of scholarship on the other hand prevented this.

SAMUEL COULING, M.A.

Samuel Couling was born in London in 1859, the youngest child of a Nonconformist minister who, though of scholarly tastes, could not give his children many early advantages, through straitened circumstances. The lad was put into an Insurance Office at fifteen or sixteen; but after two or three years, having decided to follow his father's calling, he was entered at Bristol Baptist College. Here he took a five years' Divinity course, with Arts classes at Bristol University College (now Bristol University); here too, he first became interested in Mission work in China.

In January 1883, he became minister of the Baptist Church at Totnes, Devon. His brief but happy ministry there came to an end in June 1884, owing to the fact that the Baptists Missionary Society had asked for fourteen volunteers for China. The young minister offered himself and was accepted: his people regretfully acknowledged the prior claims of the Mission field, learned to regard him as their representative *in partibus infidelium*, and lovingly kept his name on the church roll all his life.

He arrived in China in December 1884, and was designated to Ch'ing Chow foo in Shantung, where—after studying the language—he was put in charge of a newly-established Boarding-School. The boys were picked boys and all from Christian families; all instruction was in Chinese, English not being taught at all: for those were early days.

He soon realised that for his work's sake as well as his own, he ought to have a degree; and after using any leisure he could get from other work and other studies in the field, and utilizing two furloughs in the necessary preparation,

he graduated M.A. of Edinburgh in 1902. As far as the University syllabus permitted, he chose the subjects suitable for his work in China; and he also did a good deal towards his B.Sc. and LL.B. degrees, one or both of which he intended to take on his third furlough. Circumstances however, prevented this. About 1904, important changes were made in the educational policy of the Mission, which did not commend themselves to him; and after two or three years' work under the new conditions, he felt it wise to resign. It was about this time that he was twice offered the Principalship of Shansi University, which honour he declined on the ground that he wished if possible to remain with his Mission. He resigned finally from the B.M.S. in 1908; and this was one of the greatest sorrows of his life.

He then removed to Shanghai, where he was for some years tutor in a well-known family. In 1914-16 he was Hon. Sec. of the Royal Asiatic Society, (North China Branch) and editor of its Journal. During this period he perceived the lack of a general book of reference as to things Chinese in the R.A.S. or any other library, and set to work to collect material for such a book. The result was the *Encyclopaedia Sinica* which was published in 1917, and was awarded the Prix Stanislas Julien in 1919. In the Preface it is said, "It is the framework on which a more complete and worthier encyclopaedia may be elaborated," and the Editor always hoped to bring out a second edition, for which he had considerable material in hand.

In 1919, though in poor health, he accepted the Acting Principalship of Medhurst College, Shanghai (L.M.S.) and rejoiced at being back in Mission work; but at the close of the year, a severe illness compelled him to resign. In the same year he started the *New China Review*, a bi-monthly periodical devoted to sinology in all its branches.

In 1920, he accepted the invitation of the Shanghai Municipal Council to complete the History of Shanghai (in 3 vols.) left unfinished by the late Mr. George Lanning. Unfortunately only the second volume was completed at Mr. Couling's death. This took place at Shanghai on June 15th, 1922 at the age of 62.

He became a member of the R.A.S. in 1894; was, as we have said, Secretary and Editor of the Journal for several years; was made a Honorary Member in 1918, and was one of the Society's Vice-Presidents at the time of his death.

He was by nature retiring and reserved; and those traits were accentuated by the nature of the rare and dis-

troubling complaint—an oesophageal diverticulum, which after many years of increasing misery at last caused his death,—so that he was not widely known in a social sense; but one of his greatest joys in later years was the fellowship of the learned and generous men of many lands who helped in the *Encyclopaedia*, and made the *New China Review* possible.

Ever modest about his own abilities and attainments, one of his latest wishes—oft-repeated—was that there might be “no eulogies,” and this wish his friends feel bound to respect.

It may be said however, that by his courageous fight with physical weakness, and his determination to work as long as any strength was left, those who knew were often reminded of Robert Louis Stevenson, whom in features also he strongly resembled.

Most people will know him as the versatile compiler of the *Encyclopaedia Sinica*: sinologues will remember the plucky editor of the *New China Review*, (which seems likely to close its career at the end of 1922 for lack of any one to take his place): but his best memorial is in the characters and lives of certain Chinese whom he taught and guided unostentatiously but thoroughly during the best time of his life,—the twenty odd years he spent in a sleepy, sweet old city in the interior of Shantung.

He is survived by his wife (who at his desire, writes this brief sketch) and by one son and one daughter.

REVIEWS OF RECENT BOOKS.

Histoire Général de la Chine Et de ses Relations avec les pays Étrangers Depuis les Temps les Plus Anciens Jusqu'à la Chute de la Dynastie Mandchou. Par Henri Cordier, Membre de l'institut. Paris.—Librairie Paul Geuthner. 1920.

Like Confucius, M. Cordier is a great annalist, if not a great creator. He is a great student as well as a busy one. His past works show him to be the supreme authority on the bibliography relating to China, and consequently he must know things Chinese better than any one living. Students have been greatly indebted to his past works, and by this new history, he has placed readers under further obligation to his industry and knowledge. Here they have a compendium of the vast amount of material contributed by many scholars in past times, arranged in a consecutive narrative, forming a most readable history of this vast empire from the most ancient times to the present. And as though the long internal records of the people were not enough, we have thrown in, the country's relations with adjoining races and peoples both near and distant. But this may be at one and the same time, its strength and weakness. For "Ses Relation Avec Les Pays Étrangers" may have been an allurements to be shunned, rather than an opportunity to be grasped. For it is a certainty that no history of China could be adequately recorded in the four volumes, before us, containing though they do about three quarters of a million words. And when it is found that the best part of two volumes are given to "Strangers," it will be readily concluded that the history of the country itself will be that much shorter in consequence. It is a remarkable fact how the magnet of the circumference has attracted the foreign historian. We think of Mr. E. H. Parker and M. Cordier in particular, not to mention others, who have gone beyond the rich pastures of Hua Hsia, the homeland, to brouse on the wide territories beyond with their poor pasturage. Have they been allured by the great names and bloody deeds of Mongol warriors? It is not implied that these outward attractions should be altogether neglected, since the Tartar pressure, and the virility of the Eleuthes, did affect the internal history of

the State; but the tendency is to occupy too much space with these Etrangers. Here it seems appropriate to mention another defect in all foreign histories of China. The reader gets the impression that the whole history of the country consists of wars and conflicts. In his history of the English People, J. R. Green, mentions that it is a great mistake to think that the main elements of a people's history consists of wars. This at most only forms a side issue. The main concern of a people's history lies in the growth of its institutions, in its administration, in its laws, its home life and social conditions, its agriculture and business pursuits, its educational opportunities, and in the conditions of its art and literature. And we think that the present work is lacking in these respects. Too much has been made of wars, too little of the life of the people. The excuse may be advanced that things must be taken as they are. That if there is the defect, it lies with the sources in the Chinese histories themselves. To a great extent this may be true. For we remember that in the long history of Ssü Ma Kuang, after an excellent exordium dealing with the meaning of history, the author proceeds to give the annals, seriatim of the successive reigns. These become lifeless and wearisome. Still it was the noble desire of another historian, Ssü Ma Ch'ien to supplement mere chronological annals by monographs on art, religion and economics, treating of these round some central figure. To some extent this is true of other Chinese historians as well. If more such ideas had been extracted by foreign and modern Chinese historians, who have written in English or other language, the result would have been of much more value and entertainment. In this way too we should have a far better apprehension of the nature of the Chinese people and their survival through the long succession of the centuries. Certainly the author of *Dictionnaire Bibliographique* was well equipped for such a task, at least as far as the works of foreign writers are concerned; for no one can be so well acquainted with them as he.

We therefore think the learned author of this work has fallen under the allurements of "Les pays Étrangers" and given undue prominence to this phase of a history of China. This side is overweighted so no true proportion is found and an equal balance is wanting. We need only refer to the section dealing with Kang Hsi. Very little pertaining to that remarkable man is inserted. Foreign relations constitute the major part of the narrative and even individuals who had to do with China as early as the 1584 and 1604 are introduced into a reign that began only in 1662. If a summary of the dynastic history, the Tung Hua Luh, had been incorporated, it would be most valuable and illuminating of that remarkable reign. But as

it is, the general reader is left in the dark as to how the emperor proceeded to put into execution his great ideal of "governing for the welfare of the people alone." Indirectly too we should have an insight into the economic life of the people, and, the ruler's constant anxiety lest the Treasury should impoverish the people, by its frequent demands on provincial funds. This defect goes on to the end of the work. Under present conditions this may have been inevitable, and, before the defect can be remedied much work will have to be done on the original sources and fresh material extracted for a complete history of the Chinese people.

We do not wish by these suggestions to underrate this valuable and monumental work. It will prove a mine of reference and a handy compendium of Chinese history. We heartily congratulate the author on the end of his laborious task. A few of its more detailed excellencies may be mentioned. The dynastic lists of reigns with the "*nien hao*" at the end of each section will be valuable. It is remarkable how thorough the author has been in his work in giving exact days and years. *Tables des Matières* are also useful. At the end of the 4th volume there is an *Index Alphabétique*. We could wish that this were more complete, for many names and references are omitted.

We have only noticed a few errors in this long book. But amongst these, the following may be mentioned. Vol. 2, page 58, *P'ing Yang fu* is in *Chan Si* and not in *Chen Si* as given. Vol. 2, page 184, *T'ai Ping* should come under *T'ai Tsou* and not under *Tai Tsoung* as given. Vol. 4, page 239, *James Huberty* should be *Huberty James*.

We think also more space should have been given to extra-Metropolitan history of the Boxer. There is no adequate mention, that we can find, of the massacres in Shansi, Chekiang, and Manchuria. And the Shansi settlement, by the establishment of a University for the enlightenment of the people, was a signal mark of foreign goodwill, and should have a place in any record. The work of Protestant Societies should also have found a longer account.

Our last word is one of congratulation to Author and Publishers for these attractive volumes. M.

A Little Garland from Cathay. Being a Translation, with Notes, of some Poems of the Tang Dynasty (Cent. VII-IX). By T. Gaunt, M.A., Shanghai: printed at the Presbyterian Mission Press: 1919. pp. 64.

Among the multitude of translations of Chinese poems, this little volume surely has a place. There are fourteen poems, from eight

Chinese authors, translated, and it is a delight to have the Chinese text of the poems printed in the appendix. The translator chose the poems from a small Chinese anthology of the T'ang dynasty, which contains about three hundred. Most of the poets are well known, especially Li Po, Tu Fu and Han Yü.

The result is not "Chinese poetry in English verse," but early Victorian verse, with Chinese subjects. The author puts the Chinese into an ultra-English form; albeit, most of his verse is musical and very well done. We forbear to enter the discussion on what form is the most suitable for translating Chinese poetry. But the excellent and careful introductions and notes to each poem supply much that the verse cannot supply, and leave us wondering whether this somewhat cumbersome result is not the best that we clumsy westerners can hope to make out of the spiritual, spirited and sententious poetry of the China of more than a millenium ago.

H. K. W.

Colloquial Sentences With New Terms. Chinese and English texts.

By Evan Morgan. Shanghai: Kelly & Walsh, Ltd.: 1922.
pp. 170.

In his introduction the author states that "the work is not meant for beginners, but for more advanced students." This should be emphasized, for the beginner will find himself sadly at sea, if he attempts to master this work. But for the advanced student it will prove an excellent help, especially as a preparation for reading the productions of the returned student in any of the numerous periodicals that are put forth by Chinese schools at the present time. Indeed the Chinese is often so difficult and the English so clear that it plainly appears that the original sentence was literally and clumsily translated from English. A little practice under Mr. Morgan's guidance, and the student will begin to see light through the turgid periods of "The Renaissance," "La Jeunesse," "The Eastern Miscellany," and the editorial columns of some of our daily papers. How one who knows only Chinese can make head or tail of them remains a mystery.

The book is in no sense a dictionary. It is true that the sentences are arranged under eleven heads (Economics, Education, Labour, Philosophy, Politics, Religion, Science, etc.) but the division is not strictly observed, since the topics overlap; and there is no special order within the division itself. The student should take a topic and read it through carefully; even where he differs from the translator as to the exact meaning of a phrase, he will find the variant reading stimulating to thought. But in most cases he will not differ, but admire a very

painstaking piece of work. It was decidedly worth doing, and will add to Mr. Morgan's fame as the author of a very serviceable series of helps to the student of the Chinese language and literature.

H. K. W.

The Chinese Drama. R. F. Johnston, C.B.E., M.A. Shanghai: Kelly & Walsh, Ltd.

Although well worthy of investigation, students of Chinese have paid but little attention to the Chinese Drama, and therefore this book is all the more welcome. It was evidently intended as a gift book, and hence was published in an attractive form, with brilliantly colored binding, and with striking hand painted illustrations by C. F. Winzer.

It is not, however, written altogether in a popular style. Perhaps it was expecting too much of a scholar like Mr. Johnston to produce a book that would merely be popular.

Judged as a work to interest the uninitiated, it is not a complete success, for only Sinologues would appreciate some of the chapters, especially the one on the Historical Development of the Chinese Drama. To the ordinary reader there is much that will appear to be *as dry as dust*, but to the serious student there is much that will prove interesting.

We believe a much more popular book could have been written, one that would have given, for instance, some examples of the stories and plots used in the Chinese Drama, and anecdotes connected with the theatrical profession.

It would appear as if the material for the book had been gathered from Chinese writings on the drama, and there is not a great deal of evidence of first hand knowledge. It may be difficult for a westerner to write sympathetically, but one cannot escape being struck by the difference between the spirit of Mr. Johnston's book and the lectures on the same subject by Prof. Soong Tsung-faung.

The writer begins with some introductory remarks, calling attention to the small amount of literature on his subject, produced by western writers, and then gives a brief account of the village theatre, and the troops of travelling actors. This is followed by a description of the city theatre. According to the author "at the present time Peking still maintains its place as the dramatic capital, and as the best training ground for actors. Shanghai comes second, while Tientsin and Hankow rank as third and fourth." The next Section on Historical development, as we have said, is somewhat too scholarly for the ordinary reader. It is based largely upon a book recently published in Chinese called 宋元戲曲史. The author points out

the sudden development of the Chinese Drama when we come to the Mongol Period in the thirteenth century, and holds that this was "in large measure due to the fact that in the ancestral home of the Mongols the drama had already arrived at a higher stage of development than it had reached in China."

After a short section on the drama in the Manchu Dynasty, there follows a section on some characteristics and weaknesses of the Chinese Drama. This is perhaps the most interesting part of the book, but the author fails to do justice to some of the strong points such as the remarkable acting of women's parts by men, and the extraordinary ability in pantomime. The good Chinese actor without the aid of scenery or elaborate theatrical properties, by bodily and facial expression, accomplishes wonderful things. We are brought back to the Shakespearian period where the effect produced on the audience depended so largely upon the actors themselves.

In the chapter, "The Drama under the Republic," the author states that modern plays dealing with modern political and social problems have not proved a great success and have not appealed to the ordinary Chinese audience. Judged by the success of some of these modern plays in Shanghai theatres, this statement seems somewhat exaggerated. It may be true that adaptations from Ibsen and Bernard Shaw may not be acceptable to the Chinese playgoers at present, but at the same time there is a movement on foot to introduce in the modern drama the new social problems in China in regard to marriage and the relation between children and parents. The New Thought movement is exerting an influence on the drama, and in time the drama will be used more and more as a vehicle for influencing Chinese public opinion in regard to social reform.

A section might have been added on the drama in schools and colleges. Students have become amateur actors and playwrights and from the plays produced by them one can see something of the ferment going on in the mind of New China. Prof. Soong Tsung-faung calls attention to the importance of these student plays in one of his articles on the Chinese drama.

There is one misprint which might be corrected in future editions. On page 17, eighteenth line, we have "wastful" for "wasteful."

We could wish that this able writer could find time to give this subject a more thorough study and a larger treatment.

There is still much to be said in regard to the origin of the drama, the varieties of the drama, the construction of the play, the training of the actors, the influence in the past and the present and the outlook for further development.

F. L. H. P.

Korea's Fight for Freedom. By F. A. McKenzie. New York : Fleming H. Revell Co., 1920. pp. 320.

After a brief reference to earlier centuries, the author begins at 1866 and gives a fairly complete history of the attempt of the forward-looking and democratic elements in Korea to obtain independence for their nation; and provides a detailed description of the Japanese atrocities which were only too widely known, some two or three years since. Much of the suffering from these atrocities came under the eye of the author himself, and while he was evidently quite strongly biassed against Japan from the beginning, nevertheless his tale, told in straight-forward journalese, is a moving and convincing one. How one can defend Japan for the actual course of her oppressions in Korea passes belief. The book will be a useful finger to warn the Japanese in time to come.

We note one error; on p. 270 there is a quotation from Mr. D. V. Hudson, of the Southern Presbyterian University at Shanghai. There is no Southern Presbyterian University in Shanghai, or elsewhere in China. Does the author mean the Hangchow Christian College in which the Southern Presbyterians have a share?

H. K. W.

Li Duke of Ch'ien. Translated by J. A. Jackson.

This is a chapter from a well known work in Chinese, the *Ku Chin Ch'i Kuan*. The Chinese is given on one side, having the English translation on the opposite page. The little volume is daintily got up. Both types are clear. Neither the publisher nor the price is given. We give a hearty welcome to this fresh student of Chinese and hope that he will pursue the study of the language and produce other things in future. The work of translation is by no means an easy matter, especially when the attempt is made of giving a fairly literal interpretation, such as would help students to unravel the significance of each word as well as complete sentences. This is the aim of the author of this book. The main purport is quite clear. But it is evident that the translation is immature. Mr. Jackson would have been well advised to have submitted it to an older hand before publishing it. There are many imperfect renderings. We need only mention a few. On page 1 a "torn cap" is rendered as a "skin cap": *Ta kua*, a summer jacket, is made into an *overcoat*. On page 2 we have *T'a hsin li cheng shih fen ti pu kao hsing liao* rendered as "Her affections were genuine, but would never flourish"

which is quite wrong. The phrase is a very common one, meaning "She was very depressed." In pointing out these mistranslations we hope the translator will not be depressed and be deterred from pursuing his efforts at mastering the language.

Japan's Financial Relations with the United States. By Gyoju Odate, PH. D. New York.—Columbia University.

This work deals with the trade between the United States and Japan, principally during the years of the war. How the trade was financed and the developments of the banking systems of both countries are set forth in much detail. The dislocation in the discount facilities of the world occasioned by the war is clearly shown. The financial centre of exchange shifted from London to New York. It is pointed out at the same time that the machinery was very inadequate. London's long experience and unrivalled opportunities could not be replaced. We doubt whether the statement regarding the transfer of centre from London to New York will hold good to-day. In fact we think that London is rapidly regaining the position that it temporarily lost, and that it still will be the financial centre for the world's exchange. The pound sterling may still come to be the great medium of economic speech and practice. This is a book for the expert in trade and banking.

Chinese Grammar Self-Taught. By John Darroch, Litt. D., O.B.E. London: E. Marlborough. pp. 152.

This excellent little volume is a companion to "Chinese Self-taught," a work that is well-known. The design of the earlier book was to help the student to learn to speak Chinese; the present volume attacks the problem of instructing him to read. The method of presentation is that of an English grammar, so that the form of the instruction will at least be familiar to the student who proposes to himself the difficult task of acquiring the written language by the aid of a book only. It goes without saying that if Dr. Darroch could be successful with his first book, he should be so with this. The proof of that pudding will have to be in the eating; but we are inclined to believe that a determined student with a talent for languages will get a long start by mastering what he will find here. The size of the book makes it very sententious; but if the student determines to *omit nothing*, he will make steady progress. There are twenty-four lessons; which reminds one of the educational correspondence agency that advertised an infallible method for learning a

language in twenty-four hours :—"Divide the language into twenty-four parts and learn one each hour." In the case of Chinese, the student will be well-advised to make it twenty-four months; but he should master the material in this manual in much less time than that. A useful dictionary of three thousand characters, most of them defined with a single English word, is provided. Dr. Darroch has a gift of making the salient features of a linguistic problem stand out, and of expressing the facts he wishes to convey in language that is racy and clear. Many an old student will find much that is new and interesting and useful to him, if he will spend an hour or two looking through these lessons.

H. K. W.

The Economic History of China with Special Reference to Agriculture. By Mabel Ting-hua Lee, PH. D., New York, Columbia University.

In a recent article in a well-known American magazine a writer pointed out that ambitious American students were "Ph. D. mad." Everybody of this class was so bent on obtaining this coveted degree that evidently the Chinese students of brilliance who study in America are smitten with the same desire, and in order to obtain it produce Theses of various degrees of value. Ph. D. reminds them so of the old Hanlin doctorate, and they wish to be able to add "Po Shih" after their names on their return. The present volume is, however, peculiar in that it is the Thesis prepared by a Chinese *lady* at Columbia University. She is to be congratulated on the choice of her subject for the thesis, viz :—The Agriculture of China. Chinese have always looked upon agriculture as the backbone of their Country's prosperity. It may be said that the majority of her scholars were brought up on the farm. The young lady shows an interest in the condition of her own people. She reminds us that political storms pass serenely over the heads of the people while the farmers still go on with their work.

The first portion of the volume is a running account in a somewhat sketchy way of the fortunes of the farmers during the various dynasties down to the present time. This is followed by a note-book account of source material derived entirely from a copy of the Chinese Encyclopaedia which apparently the University library could boast of. Of course, the material for her study was exceedingly scanty. This criticism applies with equal force to everything that Chinese students have produced in the way of theses for this same degree.

Miss Lee refers to the paradox of Chinese Agriculture, viz :— That the Chinese have been successful farmers for forty centuries, and yet the soil appears to be as productive as ever. She claims that whereas in Western countries the yield is only fifteen bushels to the acre it is in China on the average twenty-five bushels to the acre, and yet this is not enough to supply the food needs of the people. The reason, of course, is that there are too many people and too little land. She says that China's soil is maintaining her four hundred millions but in a desperate way. Notwithstanding every device which has been drawn to their aid, their farmers barely eke out an existence. China is indeed known as the "special home of hunger." What is the solution? Our author says more land is the only solution. But where is it to be got. Probably only by more intensive cultivation of the actual amount of land which exists, supplemented by a reclamation of marshes, especially near the sea. If any nation could be justified in having earth-hunger, surely China is, but, alas, there seems so little to satisfy her hunger. Other nations are erecting barriers against her even in portions of the earth that are practically virgin soil. In the early days there was plenty of land, as for example, was the case in Canada. This land is becoming gradually filled up. Unfortunately the land in China has become more than filled, and the population is simply spilling over into other countries.

Our author gives due credit to the Manchus for the improvements which they introduced in agriculture in the early days although towards the end these things were, of course, sadly neglected. She is also impartial enough to give credit to the Japanese for having immensely improved agriculture in Korea. When she comes to speak of the Republic she says that the Republic has introduced no improvement in the condition of the farmers. She refers at length to the great famine of recent date in North China, and dwells upon the miserable condition of the farming population. She is able to introduce some interesting parallels with the Roman Empire, especially in its decadence, and to show that agrarian discontent had very much to do with changes of dynasty in her own Country. She claims that in China the latifundia which were the curse of Rome were put down by the Government with a strong hand. The result is that we have small farmers owning their own land all over the Country. She concludes her work as follows :—"All that improvements in methods of cultivation and the counteracting of the effect of natural disasters can accomplish is of a palliative character, simply postponing the evil day, unless we solve the problem of over-population or provide through the development of manufactures or otherwise a needed

outlet for our surplus population." Mr. J. O. P. Bland has recently asserted that it is impossible for China to produce more and support more people. What answer would be given to Mr. Bland by Dr. Lee is not very clear from her thesis.

D. M. G.

Travels of a Consular Officer in North-West China. By Eric Teichman, B.A. Cambridge University Press. 24/-.

There are two ways of travelling. One is to do so and say nothing about it. The other is to record experiences and publish them for the instruction of the public. Mr. Teichman has chosen the latter, much to the benefit of the public. Not much has hitherto been published on the routes taken by Mr. Teichman into distant Shensi, Kansu and Ssüchuan. Colonel Bruce published an account of his journey from India to China, but the route described by him is different from the journeys related in this work. Two excellent maps accompany the volume which are of great help in following the traveller in his long and devious ways. The journeys are marked in red lines and a glance at the maps will show the extensive regions covered by Mr. Teichman in his arduous journeys. Any future traveller will consult this work and find it of much service. It is almost needless to mention that these districts have often been trodden by missionary travellers but they have not left such minute record of their journey and experiences. If Mr. Teichman errs at all it is in a too minute and detailed record of his daily stages. Indeed we think that the book would not be less valuable if there had been less account of the day's routine—of when the day was begun and where they stopped for lunch and so on. A little of such experience is good but it tends to become monotonous when often repeated, as it is in this work. And again the book is full of such descriptions as the following. "The track climbs out of the gorge to the top of a plateau of a similar height on the other side, and then runs across the undulating uplands for fifteen *li* to the village of Kao Ts'un in the district of Pin Chou, 90 *li* from Yung-shou." A little of this is interesting but becomes wearying when most of the book is taken up with the record of such details. It could have been wished that Mr. Teichman had given rein to his imagination occasionally and described in vivid language the *toute en semble* of some great plateau or given us the impression created on his mind by the lofty mountains that he crossed. The people too might have formed more the subject of the narrative. He must have mixed with all sorts and conditions of men as he moved on from place to place, and his experiences of the people could not but be varied and curious. Yet the narrative does not leave any distinct colour on the

mind of the reader about the people. We think that if the author had taken Whitman's *Salut au Monde* with him and read it occasionally we should have a record more deeply tinged with the life of the people. So there is a certain lack of inspiration and warmth and colour in the book. It must not be thought however that these things have been wholly neglected. Indeed most useful information and interesting facts are frequently offered. And lest our remark as to the lack of colour and enthusiasm be taken, too literally, and rob the book of some of its great merits, we would call special attention to many of the impressions of the traveller on such, and many other subjects that cannot but create a deepened knowledge of these regions and of the Chinese people generally. For instance the depredations of the White Wolf bandits are brought to our view anew with new facts, especially from the point of the suffering such outbursts occasion the patient people of China. Many incidents of economics are given us and the possibility of the growth of trade, which things are of great importance to the world to-day. Many local customs too, as they were met, are written down. Little bits of history and an insight of how the country is undergoing change under the pressure of revolutions and new thought are supplied. It will be news to some to read of the factories and bridges of distant Lanchou. Much information is given on the Mohamedan in Kansu and the nomad life of the Thibetans. And we are reminded of the rich supply of wheat in Shensi and Kansu, whose fertile and wide fields form the granaries of China. The population of Kansu is mixed, the Mohamedans forming the third part. But we think that Mr. Teichman is quite mistaken in the observation he makes in the comparison of the relative success of conversions to that religion and that of the Christian religion. He thinks that the latter has been very slow in comparison with the propaganda of Mohamedanism. But he has surely forgotten that Mohamedanism has made but few converts from the Chinese. Its church is composed of the descendants of those who came in early days to China. That is to say they are not Chinese at all. Only a few Chinese have ever become Mohamedans. Really the comparison is in favour of the Christian propaganda.

By such historical references and incidents of the journey, and such amusing experiences as that recorded, on page 156, where the authorities took one of the traveller's own mules to supply the place of a wornout mule the narrative is much enlivened and the monotony of the journey is broken for the reader as it must have been to the traveller.

Besides incidental references Mr. Teichman devotes a whole chapter to the Missionary question. The criticisms made are offered in a friendly spirit and we have no doubt they will be so taken. As to their value that is another matter, and no doubt they will be weighed with all care and attention by those most concerned. In our own opinion we think they are somewhat immature, but must leave the final decision to those most competent to judge. In any case the opinion of the passing traveller are worthy of attention.

The work is handsomely illustrated with good photographs, which add greatly to the interest and the value of the book. Indeed it is a most excellently got up volume and worthy of the great Publishing House which has issued it. Therefore both within and without it is a fine addition to the books on China. M.

Tzŭ-chin shan, an alkali-synite area in Western Shansi. By E. Norin, B.Sc.

This is the first contribution from The Nyström Institute For Scientific Research In Shansi, associated with the Shansi Government University, Tai Yuan fu. In the first place we should like to congratulate Professor Nyström on the establishment which bears his name. It shows great enterprise and promises to do work that was much needed. Mr. Nyström was able to elicit the interest of members of the Stockholm University in the work, who have undertaken some of the financial burden. As a result it has been possible to secure the services of an expert to come out to investigate into the nature of the rocks and soil of Shansi. A small mountain near Lin Hsien has been marked for preliminary examination. Mr. Norin has lost no time. We have the result of his first year's work in Contribution 1 now before us. Its scientific value must be considerable, and we congratulate the author most heartily on his work as described in this pamphlet. We desire to call the attention of all scientists to this important contribution. M.

Peking. A Historical and Intimate Description of its Chief Places of Interest. By Juliet Bredon. 2nd Edition fully revised and enlarged. With 6 maps and plans and 24 illustrations. Shanghai : Kelly & Walsh, Ltd., \$10.

The Publishers, in presenting the second edition, state that, "the Author has received from the National Geographical Society, Washington, D.C., an award from the Grant Squire Fund, intended by

the Founder to mark the recognition of unusually meritorious publications relating to the Far East." In making the award the President stated the "Society desired in this way to express their appreciation of the Literary and Scholastic Eminence of Your Recent Book on Peking." The readers of this Journal will not be surprised to hear of this token of appreciation. In the review of the first edition which appeared in the 1920 volume, the fifty-first, we gave our estimate of the high value of the work in question.

In reviewing this new edition there is no need for us to enlarge on what was said in the former review, except to confirm our very favourable opinion of this beautiful book. Since then it has grown considerably, nearly 50 pages having been added to it. Chapters 9 and 10 in the first edition, being expanded in the second, into chapters 9, 10, 11, and 12. There is also added Appendix 11: *The principal festivals and fairs in Peking*. The number of illustrations have also been increased. In this new and enlarged form it will find a still larger number of readers, who will delight to learn of Peking from this fascinating work. We venture to repeat what we said before: "The authoress becomes an excellent guide, conducting the traveller over much unfamiliar ground: directing his thoughts to unobserved objects of art and historic interest, and, as the process advances, a canvas of a vast and beautiful panorama is unfolded before the reader, leaving the impression of splendid creations."

The work of the Publishers is excellently done. They have given an outward form worthy of the inward art. M.

● Dogs of China and Japan in Nature and Art. By V. W. F. Collier. London: Willian Heinemann, 1921, £2/2/-.

The dogs of China and Japan have at last come into their own. In this handsome, and well-illustrated volume, their history is worthily recorded. To those who have only been accustomed to see the street dogs full of sores and every other malady it will be a very pleasant surprise to find that there is another side to the picture, and, that dogs of various kinds occupy a definite place in the social life of the people. They have played a part in international relations. Indeed there is hardly a phase of life in which they have not figured. They have even been dressed as a man, and carried in state, in sedan chairs, like his Excellency. It is common knowledge that they have been used for food, but it may not be equally known that they have been the object of worship, in rare cases; and often used as sacrificial

animals. In every country dogs have been the object of superstition, sometimes of a good omen, sometimes of a bad one. Residents in China are well acquainted with the beating and clanging of the *kangs*, during an eclipse, to drive away the dog which threatens to eat the luminary. Hence the word eclipse is made of *eat* and a *quadruped*. Dogs are intimately connected with lions for there are dog-lions, and the word *lion* in Chinese is formed of the radical *dog* and the sound *shih*. So no work treating of dogs can avoid the allied creature the lion. And author of this work devotes considerable space to this noble animal. Indeed it would be fitting if the word lion had been added to the title.

The dog equally with the dragon, and other beasts, finds an important place in the mythology of the human race: the dragon remain a myth still, but the dog has passed from that sphere of our thinking, since he is with us daily in a concrete form. Nevertheless he has played a part in the myths of the past too. A myth of dog ancestry is not uncommon as in Alaska, in Madagascar and even in Europe. He figures too in Creation myths: and Cerberus guards the gates of the Infernal Regions. Yama had two dogs who were sent to bring in wandering souls. The dog in many mythologies is held as a sacred animal, being under the special protection of the gods, and its sanctity is also seen in the art of many peoples. Hence it has been used in sacrifice, and, was often considered as of good omen. Not only so but he has found a place in magic: for in Dahomey the carcass of a dog is hung up to ward off sorcery. On the other hand he has been held by many as an unclean animal. And it has not infrequently been used as a term of abuse: "Is thy servant a dog?" And even in England where the dog has been most highly esteemed this is not unknown. Potentates and paupers have found comfort in the companionship of dogs. Now whether man first tamed dogs and thus domesticated them, or, whether the dog felt out of place in the company of the wolf is a matter still undecided, but the fact is indisputable that man and dog are great friends. Not all these facts however are to be found within the covers of this book, but he who would know much about all dogs, and particularly about the special breeds of Chinese dogs, and how varieties and special marks, such as the short nose have been produced will find much information in this excellent book.

There is a serious error in the Table Of Dates. The last item states: "1862 Chinese Emperor Kuang Su came to the throne." This should be T'ung Chih. Kuang Hsü came to the throne in 1875. T'ung Chih is omitted altogether.

Some of the explanations are not clear, such as the word *chow* on page 58. The reader does not gather what is meant to be conveyed nor get a clear idea of the origin of *chow*.

It is a pleasure to handle this fine volume and the publisher and author are to be heartily congratulated. M.

Les Grottes de Touen-Houang. Tome quatrième Grottes 111 à 120 N.

Paris, Librairie Paul Geuthner, 1921. Price 75 fr.

The first three volumes of this handsome work were reviewed in Vol. 52 of this Journal, pp. 226-227. The high praise accorded by the reviewer to those volumes may equally be given to the fourth. Apart from its historical interest, its production is a work of art. When we think of the difficulties that had to be overcome in getting these photographs the results are marvellous? The Publisher has done his work well and the volume will be a constant testimony to the craftsmanship of those who produced this work. The letterpress is very eagerly awaited, for without the exposition and the explanations of M. Pelliot, the full benefit of these representations of Buddhist art will not be available to the public. When this does appear many promise themselves the pleasure of a serious study of these pictures. Tome Quatrième contains Table des Planches 193-256.

Arts and Art Crafts of Ancient China. By the Literary Department of the American Woman's Club, Shanghai. Printed by the Presbyterian Mission Press.

The Literary Department of the American Woman's Club under the able Chairmanship of Mrs. H. A. Wilbur arranged a most interesting program for the Season 1920-1921. The papers read before the Department have now been printed, and thus preserved, for future reference, a very wise proceeding when one considers their scope, and the amount of serious study which, of necessity, preceded their compilation.

A glance at the index shows that the study has been well directed and the subjects thoroughly divided. A delightful little Introduction, by the Chairman, opens the book and is followed by "The Cowherd and the Weaving Maiden," a well known Chinese legend translated by Mr. Charles Klieene, F.R.G.S. and then the papers appear. These comprise; six on painting, covering the period from early T'ang to early Ming; five on Architecture, treating of the temples on Omei Shan, T'ai Shan, and Pu Tu Shan, of Guild-halls and Domestic architecture;

and eleven on Art-Crafts, dealing with bronzes, rugs, porcelains and carvings. The closing article, by the Chairman, on "Notable Local Collections of Chinese Art Objects" is of unusual value, as the enthusiastic appreciation of the Literary Dept. A.W.C. has undoubtedly proved the key which has opened the doors of all the principal collectors in Shanghai to its members. Mrs. Wilbur's closing words deserve quotation and hearty endorsement.

"If the Municipality were to maintain an Art Museum, commensurate with its Public Orchestra and its Parks, it could easily display a collection of Chinese antiquities which would give it rank with the art centres of the world. No other city could command the willing services of such a jury of experts, as reside here, trained in the capacity of private buyers. Loan collections no doubt would be available for long or short periods, if a fire-proof building were provided, with bonded custodians, and a curator of such unassailable rectitude as to insure the confidence of owners. The culture of a city is gauged by such collective enterprises as this. A public spirit for art in Shanghai, is revealed by the maintenance, at public expense, of a symphony orchestra and band to give free concerts throughout the year. The Royal Asiatic Society, with its fine library on China and the Orient, and the ripe research of its annual Journal, is further tribute to the culture of Shanghai. Why not also an Art Museum?

There is yet time before Tokio, New York and London absorb all the antiquities : but not time to lose. The antiquities of Japan slipped away almost before that people knew their value, so that she now recoups from China, the source of her art. The increasing collections of Chinese art treasures are known, to every visitor of the Tokio Museums. The ebb-tide of China's treasures away from her shores is cause for alarm. Why allow these incomparable relics of a noble art to slip away to other lands, without reserving one grand collection for Shanghai?"

There is no space to discuss the papers in detail. "Chinese Homes and Gardens" by Miss Tuttle is most sympathetic; "Polychrome Porcelains" by Mrs. B. A. Edwards shows extremely careful and accurate preparation, as do many, but not *all*, the other papers. Mr. Abraham's contribution on "Sung Painting," a subject he has thoroughly at heart, is quite delightful, and Mr. Evan Morgan who has made a deep study of early ritual provides a most valuable chapter on "Bronze Sacrificial Vessels used in the Sacrifice to Heaven."

One might beg that, in future compilations—and we sincerely hope that the Literary Dept. A.W.C. will continue to publish the result of its studies—the editors will insist on a uniform system of transliteration at any rate within the confines of one article. Chinese names are admittedly difficult, no system of transliteration is perfect, but the one adopted should be adhered to, thus avoiding an immensity of confusion. May we also beg that the proof-reading be more carefully attended to, there are some quite unforgivable mistakes as the printing of “Kouling” for the name of our deeply regretted local Sinologue, on p. 44.

The publication, of which a few copies *may* still be available, is enriched by excellent illustrations from the collections of Mr. and Mrs. Bulow-Ravens and Mr. Strehlneek. It forms a delightful handbook and should prove stimulating to all interested in China and its past. It proves, moreover, that even busy women—and men—may, if they so choose help to build up the store of knowledge regarding this marvellous country in which we sojourn.

F. A.

Chinese Shadows. By Juliet Bredon.

In “Chinese Shadows” Miss Bredon has given us glimpses of Chinese life on its intensely human side. She has drawn, from her extensive knowledge of the people, shadow pictures which give the Occidental new ideas ; ideas that bring the Chinese into the company of “folks,” with the passions, the joys and aspirations, the sorrows and disappointments common to all members of the human family.

The poems are of great variety and uneven merit. The “Child Songs” with which the book opens are interesting and appealing. The “Peasant’s Prayer” is distinctly Chinese in tone and some of the “Temple Sketches” bring vividly to mind those ancient enclosures, once the centres of the spiritual life of a great people, but now falling rapidly into decay. He who has seen the Altar of Heaven and been impressed by its simply grandeur will agree that Miss Bredon has caught the true spirit of the place and the people.

The best wine has been reserved for the last, however, and the reader revels in “The Story Teller,” “The Letter Writer,” “The Blind Singer,” “The Statue,” and above all “The Sweeper of Shadows.”

One could wish that the author had seen fit to provide a preface or short introduction. It would be easier to form a just estimate of

the work if one could know how much was translation, how much paraphrase, and how much the creation of the writer.

Except for occasional jarring lines the versification is good and is usually well suited in rhythm and metre to the subject.

All lovers of the poetic in life will rejoice in the possession of this book and all true lovers of China and her children will welcome the additional light that it throws upon a great people.

G. C. S.

"O Mei" Moon and Other Poems By Alan W. Simms Lee. Published by Erskine Macdonald Ltd. London.

There is daily evidence that the Far Far West is becoming more and more interested in the Far Far East, and that this interest demands accurate and truthful information regarding an alien civilization.

This is one of the reasons, but not the only one, for welcoming the book of poems by Mr. Sims Lee. In spite of the sinister illustration on the title page, reminiscent of all the theatrical and artificial representation of China to which we are all too accustomed, the compilation shows keen insight, close observation, deep understanding and quick sympathy with Chinese life.

That this insight concerns largely the life of the "stupid people" is inevitable. "Men From Without the State" are seldom privileged to know intimately the retired life of educated Chinese. Mr. Simms Lee concerns himself with every day village happenings and describes them with keen poignancy. "Recalling the Soul" p. 28; "In Time of Plague" p. 43; "Kwei" p. 44; "The Amulet" p. 66; "Slave Girl" p. 59; and many other poems are records of life—purely Chinese. "T'oh Wang and the Doctor" p. 63 is a quaintly humorous tale, and "Evening" p. 23, a picture full of colour. Colour appeals immensely to Mr. Simms Lee and he has a wonderful sense of its variation. It is a pity that he uses inversion as often as he does, one may say that it is his besetting sin, and in "Autumn Afternoon" p. 30 it is especially annoying. Simply direct sentences are infinitely more convincing than those in which one must search for the subject and predicate. It is impossible to feel that the exigencies of rhythm call for the misplacing of words. There are a few paraphrases of Chinese poetry in the volume, but for the most part the poems are original and are strikingly vivid pictures of Chinese life in the Yangtze Valley. Although he occasionally uses rhyme and meter Mr. Simms Lee is more apt to employ *vers libre*. The book is full of lovely pictures, one of the most exquisite being the little poem

BEFORE SUNSET.

NEAR WUSIH.

The rain has ceased, the fields of young green rice become bright fields of living gold.

The mirroring canals and ponds gleam like polished silver.

From the two horizons springs the full clear curve of a brilliant rainbow.

Near one end of the rainbow a bronze fisherman, clad in a turquoise cloth, stands in his ebony boat.

About his head he slowly whirls a net, woven of gold and flame;

It falls with a hissing sound into the cool still waters disturbing for a moment the dreaming image of a ruined pagoda.

From the further bank, two herons, glistening white, rise up into the pale green sky where the evening star burns for ever before the high altar of God.

F. A.

The British in China and Far Eastern Trade. By C. A. Middleton Smith, M.Sc. London: Constable and Co., Ltd. 1920. pp. ix—295.

This work is a very British production, by a Britisher, for Britishers, and chiefly about Britishers. If the writer possesses an international mind, he puts it aside for the most part, and gives free play to his frank admiration for his countrymen, and his serene assurance that the British first, and next the Anglo-Saxon, are the salt of the earth, whose savor the Chinese need if they are to be preserved. The reader will be inclined to wonder whether the saw is right which says that "An Englishman is conceited but not boastful; an American is boastful but not conceited."

The author begins by stating as his problem, the responsibilities and opportunities of Anglo-Saxons in China, in view of the awakening there. Taking trade as his text, he gives a short history of trade relations between China and other nations, and a view of the outlook; then he takes up particular problems, such trade difficulties, chambers of commerce, banks and exchange, the machinery market. Then he expands in interesting, if somewhat irregular fashion, and gives brief biographies of Britons who have served China, and of a Chinese captain of industry; describes Hong Kong (which he always hyphenates), Canton and South China, Shanghai and the Yangtze valley, shipping, railways, mines, and some British Hongks. A brief chapter on all forms of mission work except the form which missionaries themselves regard as the most important is provided under the title "Philanthropic Efforts." But that is doubtless due to the

self-imposed limits of the book. Then chapters on the other nations, on the new Chinese, Chinese personalities, newspapers, and the China of the future.

The style is never dry, and the author is full of instances and illustrations that make good reading. He has an admirable appreciation of the excellent qualities of the Chinese, and is not blind to their defects. He indulges in a good deal of repetition; we are told repeatedly that every little town and almost every little village wants to instal an electricity plant (which may be true in South China, but hardly elsewhere); that two Britishers founded the Maritime Customs and the Salt Gabelle; that Anglo-Saxons in the Far East should co-operate. This leads us to note that to him most of China wears the look of Canton and South China; "When millions of motor-cars run over the roads of China, which are still unfortunately non-existent, and when aeroplanes are as common as steamers on the China coast, the drivers and mechanics will be Cantonese." (p. 125). To that we can only say that we will back a driver or mechanic from Ningpo or Hangchow; but this giving of a Cantonese tinge to all China makes the book a useful antidote to the earlier works of a certain other Smith, whose deft touch makes all China bear the complexion of Chihli and Shantung!

Where we take serious issue with the writer, is on the point of China's need of the Anglo-Saxon. That she needs his presence and help we cheerfully grant; all of us need each other. But we question whether China needs help just as Mr. Middleton Smith would provide it. "The only hope for immediate improvement in China is the emploment of foreigners in administrative and advisory capacities." (p. 84.) "If only the whole of South China could be given the amount of law and order that confers such a blessing upon India or Egypt" (p. 126). If the melon were to be divided then indeed China might be *given* law and order. But if she is to remain self-governing, then far better let her win, slowly and painfully, order and good government, for herself. Foreign officials can doubtless teach her much, but they cannot give her character. Mr. Middleton Smith's ideal is thoroughly aristocratic; so much so that he simply *assumes* that the salavation of the land lies in the importation of a foreign aristocracy, and does not consider whether democratic ideals and methods will not be found to be healthiest and best in the long run. As an American would say, his middle name is *Chauvin*; and that fact makes it impossible to agree with the main argument of the book. But we can thank him heartily for his detailed and picturesque statement of trade conditions and trade prospects in China.

H. K. W.

Letters from China and Japan. By John and Alice Chipman Dewey.
New York. E. P. Dutton and Company.

Dr. and Mrs. Dewey spent a year in China and Japan. These letters were written to their children at home. We who are strangers to them can enjoy them too. They are well worth reading. The experience of trained minds are always of value. The observations of these sojourners in the East, coming as they did from the New World, and recording the things that impressed them, as they came in contact with the most ancient civilization, are full of charm and interest. We recommend this book to all our readers.

The Court Painters of the Grand Moguls. By Laurence Binyon.
London. Oxford University Press.

The Historical Introduction and Notes to this elegant volume have been written by T. W. Arnold. The work contains XL plates, and the letterpress runs to forty-three pages. The whole work is beautifully executed. The Plates deal with a variety of subjects. The Frontispiece is Jahangir drinking wine under a canopy, done in colour. Every phase of life is depicted and the style of Indian art is clearly shown in these illustrations. Mr. Arnold's historical explanation and his various notes add greatly to the value and interest of the book. The common man will gain much help from his writing, and the illustrations will help him to life his eyes to the scenes of the past, and enlarge his vision of the pleasures and pursuits of people in other lands, during a fascinating period of history.

Must We Fight Japan? By Walter B. Pitkin. New York. The Century Co.

This is the question propounded by Mr. Pitkin and which he discusses in about 500 pages. The Washington Conference answered NO and Japan assented to that verdict and is making it clear that she meant what she then said. The book therefore is already somewhat out of date. The author's final word is "Nothing will aggravate the yellow peril so much as the sanitation of Asia. If that comes, carried out in a thorough and effective way, it will inevitably lead to very important developments. What course they may take, no one can say." Though the title is out of date, the book contains a vast amount of useful information which is of permanent value.

Peking, A Social Survey. By Sidney D. Gamble, M.A., assisted by John Stewart Burgess, M.A. New York, George H. Doran Co., 1921.

Of the making of books on Peking there is no end. To the student of things Chinese, the artist, the poet, the traveller, Peking has ever been a source of inspiration. Practically every list of new books on China contains another effort on Peking. The cause for this is found in the charm and appeal of the ancient seat of Chinese culture.

In the book before us, however, we have something different. Not the art, history, poetry, politics of Peking confront us but the humble facts that portray the nature of the society within the five cities. This time the people themselves, their community, their social organization, their ideals and efforts, their vices and failures are presented in a simple straightforward manner. A picture of Peking as it is, apart from its glory and its glamor.

It is well sponsored, for it comes to us foreworded by G. Sherwood Eddy, who represents the Christian forces and their modern attitude toward the social problems of an ancient society, and Robert A. Woods, author and social worker of Boston. The apparent aim of the undertaking is well represented in the activities of these two men, for Gamble's effort discloses no other more definite objective than that of arousing the consciousness of the Christian missionary forces to the need of providing for the Christian church a social service program as an outlet for religious zeal. This aim is frankly stated both in the early parts of the work as well as in the concluding chapter that sets forth certain achievements of a group of Christians who faced the social facts and the challenge of them,—the Peking Community Service Group.

The work must therefore, be judged from this point of view and not on a professional or technical basis. Evaluating the results in terms of their aim, they certainly have done well when one considers the limitations of their staff of investigators and the amount of time allotted to the discovery of the facts. They have put in 300 pages a great mass of facts that give one certain rather definite impressions of social conditions in the capital. These facts were not secured by the usual professional methods of survey, for one hesitates to accept as altogether reliable the census figures of the police when after years of experience in census taking the United States government has not yet solved the problem of reliability in census results. They did, however, collect all the gatherable facts, analysed them and in text and graph set them forth.

More rigid selection and some cutting might have reduced the size of the volume to good advantage, for one wants facts interpreted and related either to the discovery of a definite problem with a suggested solution, if possible, or to an aim. There is many a paragraph that would never be missed had it been omitted.

The more or less formal presentation of these masses of facts, although illuminated by photographs, maps and graphs, together with not as much interpretation and problem—stating as one expects in such a work, together, also, with a lack of completeness due to the limitations involved, suggest that the name of the book is misleading. Instead of "Peking, A Social Survey," "A Social Handbook of Peking" would describe the contents. A title should suggest the contents rather than describe an hope.

The first chapter in these three hundred pages provides the *raison d'être* for the work and sets forth the general conclusions of the study. They represent not so much conclusions as brief summary descriptions of the conditions regarding geography, government, population, health, education, commercial life, recreation, the social evil, poverty and philanthropy, and prisons. Then, introduced by an historical account of Peking, rather dry because necessarily brief, each of these topics is given such detailed treatment as could be afforded by the facts that were discoverable. These chapters, in spite of certain deficiencies of completeness and analytical interpretation, contain some very interesting sections, such as, an account of the growth of the Renaissance Movement and a description of an annual meeting of the Gild of the Blind.

In the long and arduous task of setting up these details, it is hardly surprising that a number of traditional attitudes should find expression. A careful student of things Chinese hesitates to accept what would find only too ready an acceptance, at least in America, in references to China as a country of "an excess population." Careful treatment in the interests of accuracy would have called this "centers of congested population." To dispose of a race by reference to "phlegmatic temperament"; to assert degeneracy in country villages as "75 per cent. morons or worse"; to account for prostitution by an insistence upon a Chinese "low estimate of women"; and to consider a "low standard of living" more fundamental than poverty,—are inaccuracies that might well be excused but remain inaccuracies, nevertheless, at least unless substantial proof be presented therewith.

The next section presents about one hundred pages of the results of some real survey work as conducted in two or three limited districts. Technically the best part of the book is Chapter XV, *Church Survey*,

The graphs are well made, the method is clearly set forth, and the topics are well selected in view of the special object of the enquiry.

The last hundred pages are appendices containing tables of statistics, clippings, source materials of various kinds, regulations, etc. that supplement the data embodied in the text. A good workable index enriches the volume.

Taking the work as a whole, a patient reader will find much of interest, because he will see Peking as he never saw it before; a literary style, sacrificed somewhat for a handbook presentation of findings; but hardly a model for a social survey. This the authors themselves freely admit pleading their limitations; we would hesitatingly suggest a plea of inadequate objective as well.

Nevertheless, in trying to stimulate surveys in China and in attempting to arouse certain social forces that may make for reconstruction, the authors have produced a work which no one interested in social progress can fail to possess.

D. H. K.

A Diplomat in Japan. The inner history of the critical years in the evolution of Japan, when the ports were opened and the monarchy restored, recorded by a diplomatist who took an active part in the events of the time, with an account of his personal experiences during that period, by the Right Honorable Sir Ernest Satow, G.C.M.G., LL.D., D.C.L.

In this interesting record a mature mind and seasoned diplomat describes a period of his early service when the bouyancy of youth and the glamor of adventure were coupled with the ambition to serve his country and to add to her prestige in international affairs. It covers the period from November 1861, when he secured appointment as Student Interpreter of the British Legation to Japan, to February, 1869, when his first home leave occurred. The daily journal of the author and his home letters are the material of the book. The manuscript was prepared just after the termination in 1882 of his service as Japanese Secretary of the British Legation, and then laid aside with no thought of publication, until 1919. Then, as a result of the great interest in Anglo-Japanese relations, younger members of his family induced him to complete the story of the period when these relations began. A double interest is given by the fact that this period was also the one in which the direct rule of Japan was restored to the ancient line of sovereigns which had been in abeyance for over six hundred years.

The process by which the feudal barons of Japan came to power, and through successive conflicts between them the Shogunate arose, and the resulting withdrawal of governmental power from the imperial family, until the Mikado became the spiritual head and the Shogun (called by the Europeans "Tycoon"), became the political head of the state,—this has been presented at length by other authors and is very briefly summarized by Sir Ernest Satow.

The treaties had been negotiated by the Shogun. No foreigner was allowed to see, much less to negotiate, with the divine head of the state, the Mikado. These treaties, secured first by the United States, then by England and France, and a little later by Holland and Russia, were strongly opposed by the imperial party and by many of the provincial chiefs,—the daimios. This fact led to divergent policies of the British and French legations. The French took the position that the Shogun's rule must be strengthened. The treaties had been made with him. The Mikado and daimios were strongly for seclusion; they wanted the foreigners to be expelled. The British legation, however, held that the Shogun had acted only for the Mikado, that the Mikado would certainly be restored some day and that anything which might properly be done by the legations to hasten the restoration would make foreign intercourse more secure and would bring uniform stable government more speedily. Much of Sir Ernest Satow's narrative is concerned with the process of bringing the legation's view favorably before those Japanese officials and men of influence with whom members of the legation staff were thrown, either officially or socially.

Herein we have recounted the early experiences of the author and the dangers encountered by foreign residents from the anti-foreign spirit that existed in the country resulting in the murder of Richardson by the followers of Satsuma and the attempt by the Choshu clan to close the Straits of Shimonosheki, resulting in the reduction of the forts by the allied ships of England and France.

Sir Rutherford Alcock, the British Minister, having left Japan was succeeded by Sir Harry Parkes, July, 1865. With him Satow served intimately through the succeeding years and came to have great regard for his integrity and courage. In this period the ratification of the treaties by the Mikado was secured. This required long, vigorous negotiation because it was opposed by the Tycoon and his party.

From this time Satow carried out a number of commissions for his chief, to bear messages to various parts of the country or to secure information on important political tendencies. Thus occurred

his first visit to Osaka. Here the foreign ministers were received by the Shogun in his palace. The reception was carried out in European style, after long debate as to how it should be done. Arrangements were completed for the opening of the ports of Osaka and Kobe. The British minister bore the brunt of these negotiations, Satow being his interpreter. The people of these cities welcomed the opening of the ports, but the conservative officials very strongly opposed.

The growing opposition to the Shogun culminated in his resignation on November 8th, 1867. The plan was to govern by a council of daimios, with decision by the Shogun, subject to the approval of the Mikado. A representative told Sir Harry Parkes that the cause of the internal troubles was the renewal of intercourse with foreign nations. The Shogun did not give up the leadership of the Tokugawa clan, and civil war threatened. The storm broke early in 1868 with fighting at Osaka, Fushimi and Kyoto. The Shogun's party suffered repeated defeat. Troops from the west passing through Kobe fired on foreigners and precipitated the "Bizen affairs." As a result of this the Mikado was required to accept the responsibility for attacks on foreigners. In an edict of February 3rd, 1868 the Mikado accepted the resignation of the Shogun and assumed responsibility for the treaties.

On March 23rd the first audience of the Mikado at Kyoto was to be given to the foreign ministers in a body. Elaborate preparations had been made for the entry into his sacred presence. As Sir Harry Parkes and his escort were riding to the palace they were assaulted by two desperados who dashed at the line and hacked at the horses and men with their swords. No serious injury was done to the foreigners. Several Japanese were badly hurt before the two assailants were disposed of, one captured and the other killed. It was impossible for the minister to go on to the audience. Very soon messengers were sent to him with the apology of the Mikado and his ministers, to whom he replied that a graver outrage had been committed on the Mikado than on himself, and he felt assured that the government would vindicate the honor of their sovereign. An audience was arranged three days later at which the minister said "Your Majesty is taking the best measures to place the foreign relations of Japan upon a permanent footing by establishing a strong general government, throughout Your Majesty's dominions, and by adopting the system of international law universally recognized by other states."

Again on May 15th an audience was accorded the British minister to present his credentials for which he had made application im-

mediately upon the abdication of the Shogun. This took place in Osaka in a temple arranged for the purpose, the Osaka palace having been burned in the civil war. The simplicity of the setting was accounted for on the ground that the Mikado was in the field conducting military operations.

The last of the Shogun's adherents having been overcome in the east by the imperial forces, the Mikado entered Tokyo on November 26th. The procession was observed by the legation's staff. The Mikado's black lacquered palanquin was surrounded by retainers and soldiers, this was followed by his Prime Minister, Date, well known to Satow, and then in a closed chair the Mikado himself. On January 5th 1869 the Mikado gave audience to the British minister and his staff in Tokyo. They were ushered into a dark room where the Mikado sat under a canopy. His dress could hardly be distinguished, but his face artificially whitened shone out brightly from the obscurity. The Prime Minister stood below on the right and read the Mikado's speech. Shortly after this audience Satow returned to England for his first home leave.

There are catalogues of the names of men whom the author met, that mean little to the reader, except as he recognizes now and again one who became known later in the public life of Japan. There are details of feasts and drinking that weary the reader. There is sometimes obscurity of sequence; but one feels that Sir Ernest Satow has earned the right to tell us, in any way that he wishes, of this interesting period of Japanese history, and that he has presented rather modestly his part in the forming of official opinion that led Japan to her present form of government.

H. A. W.

Shanghai, August 1, 1922.

Hinduism and Buddhism. An Historical Sketch. By Sir Charles Eliot, H. M. Ambassador at Tokyo. 3 vols. London, Edward Arnold & Co. 1921. pp. civ. 343, 322, 513. £4 4s.

To call a learned three volume work of this sort a mere "historical sketch" seems a trifle absurd, until one thinks of the vast area, in time and space, that is to be covered; so that it is impossible to give more than a sketch for any one country or period. For example, the mighty movement of Chinese Buddhism is described in some 113 pages (about 40,000 words). Buddhism, in one form or another has made itself a home in all the countries of Central and Eastern Asia, and is a living religion after a history of 2,500 years. Hinduism, while more confined in space, has an even longer history. This

confinement in space, as well as the fact that "there is often great similarity under superficial differences" of Indian beliefs and practices, makes possible a more succinct treatment of Hinduism. A few chapters in volume 1, together with the specific discussion of Hinduism in the second half of volume 2, are sufficient for its whole treatment.

The scholarship required to assemble and order the array of facts presented in the work is vast indeed, and one knows not whether to admire most the author's acquisitive and classifying powers, or the admirable sanity of judgment that permits him so well to evaluate the varying national forms of so Protean a religion as Buddhism. It is true that the rationalist sympathies of Sir Charles Eliot cause him to lean rather heavily, in his introductory essay, on the side of Buddhism, as contrasted with Christianity. A contributing cause is also, doubtless, the remarkable fascination which the refined forms of Buddhism exercise over more than one scholarly mind. (In the main body of the work, this feeling is less evident). On the pages beginning with LI, for example, he argues persuasively for the truth of some form of metempsychosis. Or p. lxxxiv, "The practice of arranging the congregation in seats for which they pay seems to me more irreligious than the slovenliness of the heathen, and makes the whole performance resemble a dull concert." Putting aside the fact that in every Christian house of worship there are free seats for the poor, the stranger and the casual worshipper, we can only say that it is a matter of taste to prefer slovenly spontaneity in worship to orderly spontaneity. Or p. xcii, in speaking of Buddhism as tolerant, and noting the exception of Tibetan Buddhism, he says (note), "The Tibetan church has acquired and holds power by political methods. It is an exact parallel to the Papacy, but it has never burnt people." Here again, it is a matter of taste. Which is the worse torture, to burn a heretic, or to expose him to the Tibetan sun sewed up in a wet yak's skin? Or p. xcvi, "In fact European civilisation is not satisfying, and Asia can still offer something more attractive to many who are from Asiatic in spirit." Surely then the "something more attractive" will itself not be Asiatic, but universal, in spirit. Yet in many ways, this introductory essay is the most satisfying and useful part of the whole work. The average reader will do well to read it last, and view the author's judgments in the light of the whole material that he has amassed. He will then be able to add the suitable number of grains of salt. For the whole essay reveals an acute and scholarly mind strongly affected by years of Eastern contacts, and inclined in his summing up to approve and defend Eastern ways of thinking, more than when dealing in detail with those ways. For we repeat that he is in general very sane and

trustworthy in judgment. Only a mind deeply interested in religion would have undertaken this lengthy study, and one of the best evidences of his fitness to do so appears in the fact that while he tends to favor the religion he is describing at the moment, he seems to feel no temptation to use satiric or cheap wit at the expense of Western religion; a temptation to which too many writers have succumbed.

Beginning with a general view of early Indian religion, the work ploughs steadily on. The learned author has acquired (laborious task!) many of the original languages concerned, and has then gone to the original documents for his material. It is sometimes difficult to tell whether he is making an independent study, or whether he is following some standard writer or translator. The references in the notes are so numerous that it would seem that every standard work had been consulted, and it is probably safe to presume that where no credit is given elsewhere the whole is independent. There is no space in a review of this sort to give, even in outline, the course of the whole tale. We have already indicated the amount of treatment given to Hinduism. The story of the rise and spread of Buddhism is followed through India, Ceylon and Farther India, Central Asia, the isles of the sea, China, Korea and Tibet. Unfortunately Japan had to be omitted, since before publication the author was appointed ambassador to Tokyo, and thought it the part of wisdom to say nothing, to "refrain from public comments on the institutions of the country to which he is accredited." But although there are omissions, the account is extraordinarily complete for the amount of space used, and the student who consults the work for information will rarely need to go elsewhere except for details. Incidentally, the index, which alone occupies 51 pages of fine type, will be found to be most useful. We regret, however, that there is no index to the Chinese characters used in the notes to the section on China.

It is this section on China that will be of most interest to readers of the Journal. In the first place it has the great virtue, too often lacking in works of this sort, of quoting names and technical terms by their Chinese character. This will prove a great convenience to the serious student. Two incorrect characters should, however, be noted; p. 269 季 should be 李; p. 309 眠 should be 眼 (unless the Romanisation is incorrect). Again, in China (as elsewhere) to get the proper setting for Buddhism it is necessary to take account of other religions, and as a result we get an excellent little handbook of Chinese religions together with the account of Buddhism. For authorities, the author acknowledges

himself chiefly indebted to Johnston, and he could hardly have a better dependence. But he consults all the important authors, and maintains his own independence of judgment. It is impossible to tell, however, where his independence begins and where it ends; in particular, his knowledge of Chinese, and the extent to which he bases his judgment on original investigation of the Chinese canon, remains a mystery, so that in praising the work, we are not sure just what sort of credit to assign to the author. But of the excellence of his product there can be no question. The account, within the limits of its space is complete and well-balanced. The special student will find it an excellent summary; the general student a reliable guide.

In conclusion we are furnished with an essay on the "Mutual Influence of Eastern and Western Religions." The author treats of Christianity in India, Indian Influence in the West, Persian Influence in India, and Mohammedanism in India. Naturally the part which most interests us is the discussion of Indian influence in the West, in which he examines the Buddhist and Christian parallels which different scholars have collected, and makes an estimate of possible Christian dependence on Buddhism. His conclusions are again marked with essential sanity; for example he says that the majority of parallels collected by Edmunds and Anesaki are fairly obvious thoughts which occurred to two writers in different times and countries and suggested similar expressions. In no case will Sir Charles's explanations be found necessarily repugnant to Christian scholars, and the conjecture that two of the parallels are pieces of folk-lore which circulated in Asia and Eastern Europe is especially attractive. In short this concluding essay is marked with the virtues which are prominent throughout the work. With the trifling exceptions noted earlier, the whole is admirable beyond words; such a combination of scholarship and wise judgment in assigning values is rare enough in the world of students. We trust that it may be found possible, in a future edition, to include the three chapters on Japan which diplomatic necessities have excluded from the present work.

H. K. W.

NOTES AND QUERIES.

A West China Research Society is being formed in Cheng-tu by Union professors and others for geological and anthropological research.

Mr. J. H. Edgar and a picked party propose to start in July for a journey in the Upper Kin Chuan. The expedition will have as its object the investigation of local anthropology.

Mr. Norman Shaw, Customs, Canton, writes:—

Notes on Chinese Cash.—"Those of your readers who were stimulated to collect Chinese cash by the issue, under the auspices of the Society, of the volume on the "Stewart Lockhart Collection," may be interested to have some information on collecting. During a recent residence in Swatow the writer went through 12,000 cash bought on the street, and the following analysis of these cash—each of which was individually examined, appears to be worth recording.

Cash at Swatow have sadly deteriorated, as at present one tael (Haikwan) will purchase from 2,300 to 2,400, against 1,500 to 1,600 twenty years ago. The depreciation is due to the introduction of cash from Annam, of which 1,000 weigh only 47 taels, as against the standard in the seventeenth century of 1,000 cash = 100 taels by weight, In 100 cash at Swatow the following percentages were found—a fairly constant percentage in 12,000 counted:—

| | |
|-------------------------|--------|
| 1. Annam cash | 79—80% |
| 2. Manchu cash | 15—16% |
| 3. Kuan Yung (Japanese) | 3% |
| 4. Older than Manchu | 2% |
| | <hr/> |
| | 100 |

1. The Annam cash are principally Kuang Chung (光中) circa 1790; Chia Lung (嘉隆) circa 1810; and Ching Shêng (景盛) circa 1800.

2. Among cash issued by the Ch'ing Emperors about 30—35% are those of Ch'ien Lung, Chia Ch'ing 26—27%, Tao Kuang 25%, and others represent the balance, Shun Chih and Yung Cheng being very rare, and almost all Kuang Hsü found being those of Fukien province.

3. The K'uan Yung (寬永) cash are interesting. They were minted in Japan from A.D. 1624 to 1643, and as, in the middle of the following century, they were found to be flooding the market; it was directed that they were to be bought up and sent to Peking to be re-melted.

4. It is a remarkable fact that in every string of 1,000 cash in current use at Swatow, one may find 8 or 9 specimens of great age *e.g.* K'ai Yuan (開元) 7th century A.D.; Yüan Fêng (元豐) A.D. 1078—1085; (of the latter almost inevitably several are found); Huang Sung (皇宋) A.D. 1038—40; Shao Shêng (紹聖) A.D. 1094—98 etc., etc.

A curious fact is the scarcity of Southern Sung coin and the presence of many Northern Sung coins. Ming cash are rather scarce. The cash are usually in good condition and the inscription quite legible.

A recent examination of 1,500 cash from Kaifêng, Honan, reveals that about 95 per cent. are of the Ch'ing dynasty, with 3 per cent. pre-Manchu, from 2 to 3 per cent. K'uan Yung. Of the Ch'ing cash over 4 per cent. belong to Ch'eng Lung, something over 25 per cent. Chia Ch'ing, and something under 25 per cent. Tao Kuang, with a few Kang Hsi and Kuang Hsü, and hardly any of the other Emperors' mintage.

It would be interesting to the writer to know in what part of China the Southern Sung and Ming cash are to be found in current use, and also those of the smaller dynasties, such as the Liao, Liang (Posterior) and Ts'in (Posterior) and why those of the Yüan are scarce. The above-mentioned coins are of course small, not including any 重寶."

N. S.

The London University has conferred the Doctorate degree on the Rev. J. P. Bruce M.A. one of our members. The thesis presented by Dr. Bruce was on the Sung philosophers, which will soon be published. Dr. Bruce has worked for many years in Shantung as a missionary in connection with the Baptist Missionary Society. Another member of the same Mission, Rev. H. R. Williamson has just passed the M.A. degree with distinction in the same University.

ADDITIONS TO THE LIBRARY.

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(P)—Indicates Books presented.

| | | <i>Authors, etc.</i> | |
|----------------|--|--|-----|
| 054—G 20.1 | Bulletin Archeologique du Musee Guimet. | <i>Fasc. I & II.</i> | |
| 059.22—J 32.1 | Programma voor het Congres van het Java-Institut. | | (P) |
| 059.22—J 32.11 | Catalogus van de Houtsnijwenk Tentoonstelling. | | (P) |
| 180—C 11.1 | Chinese Thought. | <i>Carus, P.</i> | |
| 249—H 85 | Ancestor-Worship and Japanese Law. | <i>Hozumi, N.</i> | |
| 275.1—M 59 | The Political Obstacles to Missionary Success in China. | <i>Michie, A.</i> | |
| 275.4—P 22 | Sádhu Sundar Singh, The Called of God. | <i>Parker, Mrs.</i> | (P) |
| 294—L 22.13 | Rigveda Brahmanas. Harvard Oriental Series. Vol. 25. | <i>Keith, A. B.</i> | (P) |
| 294.1—D 53 | The Thirty-Seven Principles of Bodhi Enlightenment. | <i>Dharmapala, A.</i> | (P) |
| 294.1—L 13 | Buddha: His Part In Human Evolution. | <i>Laffitte, M.</i> | |
| 297—Z 9.1 | A Moslem Seeker after God. | <i>Zwemer, S. M.</i> | (P) |
| 299.51—K 84 | Suuri Oppi Johdatus Kungfutselaiseen Elamankatsomukseen. | <i>Korhonens, K.</i> | (P) |
| 299.51—P 11.12 | China and Religion. | <i>Parker, E. H.</i> | |
| 354.4—An 2 | British Administration in India. | <i>Anderson, G.</i> | (P) |
| 378—In 1 | The Institute of International Education Guide book for foreign Students in the United States. | | (P) |
| 378.52—T 57 | The Tokyo Imperial University Calendar 2580-2587 (1920-1921). | | (P) |
| 380.51—Sm 4 | The British in China and Far Eastern Trade. | <i>Smith, C. A. M.</i> | (P) |
| 398.3—Si 1 | The White Elephant. | | (P) |
| 427.91—Yu 1 | Hobson-Jobson a Glossary of Anglo-Indian Colloquial Words and Phrases. | <i>Yule, H. and Burnell, A. C.</i> | |
| 491.3—D 28 | The Pali Text Society's Pali-English Dictionary Part I (A). | <i> Davids, T. W. R. & Stede, W.</i> | (P) |
| 495.1—D 25 | Chinese Grammar Self-taught. | <i>Darroch, J.</i> | (P) |
| 495.1—M 82.1 | Colloquial Sentences with New Terms. | <i>Morgan, E.</i> | (P) |
| 495.11—K 12 | A Mandarin Phonetic Reader in the Pekinese Dialect. | <i>Karlgren, B.</i> | (P) |
| 495.6—B 41 | English-Tibetan Colloquial Dictionary. | <i>Bell, C. A.</i> | (P) |
| 495.6—B 41.1 | Grammar of Colloquial Tibetan. | <i>Bell, C. A.</i> | (P) |
| 499—B 72.14 | Wir Menscher der indonesischen Erde I. Die indonesische und die indogermanische Volksseele. | <i>Brandstetter, R.</i> | (P) |
| 551.22—G 34 | Note Sismologie Le Tremblement de Terre du Kan-Sou (Chine) 16 Déc. 1920. | <i>Gherzi, E.</i> | (P) |
| 552.32—N 75 | Tzu-chin-shan, and alkali-syenite-area in Western Shansi. | <i>Norin, E.</i> | (P) |
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| 630—L 63 | Some Economic Features of Chinese Agriculture. | <i>Lin, D. Y.</i> | (P) |
| 630.951—L 51 | The Economic History of China with Special Reference to Agriculture. | <i>Lee, M. P. H.</i> | (P) |
| 709.51—Am 3 | Arts and Art Crafts of Ancient China. | | (P) |
| 709.54—B 51 | The Court Painters of the Great Moguls with Historical Introduction and Notes by T. W. Arnold. | <i>Binyon, L.</i> | (P) |

- 709.54—R 61 Sculptures Civaïtes de l'Inde. *Rodin, A.,
Coomarasway, A.,
Havell, E. B.,
et Goloubew, V.* (P)
- 737—L 11 Catalogue of Chinese Coins from the VIIth Cent. B.C. to A.D. 621. *Lacouperie, T. de*
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| Ayscough, Mrs. F. | 20 Gordon Road, Shanghai | 1906 |
| Cordier, Prof. Henri | Ecolo speciale des Languages orien- tales vivantes, Paris | 1886 |
| De Groote, Dr. J. J. M. | Leyden, Holland | 1887 |
| Ferguson, Dr. John C. | Peking | 1896 |
| Fryer, Prof. John | University of California, Berkely, California | 1886 |
| Giles, Prof. Herbert Allen | Selwyn Gardens, Cambridge... .. | 1880 |
| Hirth, Prof. F. | Columbia University, New York City | 1877 |
| Hosie, Sir Alexander | Foreign Office, London | 1877 |
| Lanman, Prof. Charles B. | Harvard University, Cambridge, Massachusetts | 1908 |
| Lockhart, Sir J. H. Stewart, K.C.M.G. | England | 1885 |
| Morse, H. B. LL.D. | Arden, Camberly, England | 1888 |
| Parke, Prof. E. H. | 14 Gambier Terrace, Liverpool ... | 1877 |
| Pelliot, Paul | 52 Boulevard Edgar-Quinet, XIV, Paris | 1901 |
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| Sampatrao, H. H. the Prince ... | Gaekwar of Baroda, India | 1898 |
| Satow, Rt. Hon. Sir E., G.C.M.G. | Beaumont, Ottery St. Mary, Devon | 1906 |
| Warren, Sir Pelham, K.C.M.G. ... | Woodhead & Co., 44 Charing Cross, London | 1904 |
| Little, Mrs. Archibald | 155 St. James' Court, London ... | 1906 |

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| Williams, E. T. | Washington | 1889 |
| Williams, Prof. F. W. | 135 Whitney Avenue, New Haven, Connecticut | 1895 |

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| *Abraham, R. D. | 3A Peking Road, Shanghai ... | 1914 |
| Adlam, Miss Edith M. | 510 Avenue Foch, Shanghai ... | 1920 |
| Adolph, W. H., PH.D. | Shantung Christian University, Tsinanfu | 1917 |
| Albertsen, K. | Telegraph Administration, Peking | 1920 |
| Allen, E. L. | Revenue Dept. S.M.C., Shanghai... | 1921 |
| Allen, K. E. | Jardine Mathison & Co., Hankow | 1922 |
| Alway, Mrs. C. | c/o Butterfield & Swire, Tsingtao | 1917 |
| American Women's Club, Literary Dept. | c/o Mrs. H. A. Wilbur, 124 Dix- well Road, Shanghai | 1922 |
| Ancell, Rev. B. L. | Am. Church Mission, Yangchow ... | 1911 |
| Andersson, Dr. J. G. | Ta Tsao Chang, Peking ... | 1919 |
| Archer, Allan ... | British Legation, Peking ... | 1915 |
| Arlington, L. C. | Chinese Post Office, Peking ... | 1917 |
| Arnold, Julean H. | American Legation, Peking ... | 1904 |
| Bahnson, J. J. | G. N. Telegraph Co., Shanghai ... | 1909 |
| Bahr, P. J. | 165A N. Szechuen Road, Shanghai | 1909 |
| Bahr, A. W. | Montross Gallery, 599 Fifth Avenue, New York City | 1909 |
| Bailey, J. A. | 89 Range Road, Shanghai ... | 1920 |
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| Baldwin, Mrs. J. W. | 4 Ezra Road, Shanghai ... | 1920 |
| Barrie, Dr. Howard ... | Kuling General Hospital, Kuling | 1920 |
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| Barton, S., C.M.G. | British Legation, Peking ... | 1906 |
| Bates, J. A. E. | 3A Yu Yuen Road, Shanghai... | 1919 |
| *Bayne, Parker M. | West China Union University, Chengtu | 1911 |
| Beaman, W. F. | Shanghai College, Shanghai ... | 1921 |
| *Beauvais, J. | Consul de France, Canton ... | 1900 |
| Beebe, Dr. R. C. | 5 Quinsan Gardens, Shanghai ... | 1889 |
| Belcher, H. B. | Foochow ... | 1917 |
| Beltchenko, A. T. | Russian Consulate, Hankow ... | 1918 |
| Bendixsen, N. P. | G. N. Telegraph Co., Shanghai ... | 1913 |

| Name | Address | Year of Election |
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| *Bessell, F. L. | C. M. Customs, Canton ... | 1905 |
| Beytagh, L. M. | Ilbert & Co., Shanghai ... | 1910 |
| Bierens de Haan, D. | c/o Holland-China Trading Co., Hankow | 1920 |
| Binet, Marcel ... | Credit foncier d'Extreme-Orient, Tientsin | 1920 |
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| Billingham, Dr. W. B. ... | 14 Kiukiang Road, Shanghai... | 1908 |
| Black, S. | G. N. Telegraph Co., Peking ... | 1910 |
| Blackburn, A. D. | H.B.M.'s Consulate-Gen., S'hai ... | 1917 |
| Blume, W. W. | 18 Quinsan Road, Shanghai ... | 1921 |
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| Boode, E. P. | 17 Museum Road, Shanghai ... | 1920 |
| Borrett, Mrs. | | 1921 |
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| Botham, Rev. Mark E. | China Inland Mission, Shanghai... | 1921 |
| Bournonville, C. de ... | | 1920 |
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| Bowser, Miss H. C. | 3 Cleveland Gardens, Ealing, London W. | 1914 |
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| Brace, Capt. A. J. | Y.M.C.A., Chengtu ... | 1921 |
| Brandt, Carl T. | c/o Sweetmeat Castle, Shanghai ... | 1896 |
| Brenan, J. F. | British Legation, Peking ... | 1922 |
| Brennerman, Mrs. J. J. | 97 Rue Massenett, Shanghai ... | 1922 |
| Brett, Mrs. J. H. | Int. Banking Co., Shanghai ... | 1920 |
| Brisker, M. G. | Lever Bros., The Bund, Hankow | 1921 |
| Bristow, H. B. | H. H. Bristow, British Consulate Kiangchow | 1897 |
| Bristow, H. H. | British Consulate, Kiangchow ... | 1909 |
| Bristow, J. A. | Standard Oil Co., Shanghai ... | 1914 |
| Brooke, J. T. W. | Davies & Brooke, Shanghai ... | 1915 |
| Browett, Harold ... | 8 Museum Road, Shanghai ... | 1891 |
| *Brown, Sir J. McLeavy, C.M.G. | Chinese Legation, 59 Portland Place, London, W. | 1865 |
| Brown, Thomas ... | La Roque, Sutton, Surrey ... | 1885 |
| *Bruce, Edward B. | 80 Wall St., New York, U.S.A. ... | 1918 |
| Bruce, Rev. J. P. | Tsingchowfu, Shantung ... | 1916 |
| Brune, H. Prideaux ... | British Legation, Peking ... | 1914 |
| Bryant, P. L. | 40 Avenue Dubail, Shanghai ... | 1917 |
| *Buckens, Dr. F. | Musée du Cinquantenaire, Brus- celles | 1915 |
| *Buma, C. W. A. | 28 Rue Galilée, Paris (16e) ... | 1921 |
| Burdick, Miss S. M. | Baptist Mission, West Gate, S'hai | 1909 |
| Burkill, A. W. | c/o A. W. Burkill & Sons, Shanghai | 1912 |
| Burkill, Mrs. A. W. | c/o A. W. Burkill & Sons, Shanghai | 1912 |
| Burns, Mrs. | c/o Am. Trading Co., 319 Avenue Joffre, Shanghai | 1916 |
| Butland, C. A. | Asiatic Petroleum Co., Chinkiang | 1920 |

| Name | Address | Year of Election |
|-----------------------------------|---|------------------|
| Cladwell, Rev. H. R. | Yenping Fu, Fukien | 1920 |
| Campbell, A. S. | Canton Christian College, Canton | 1922 |
| Cardeillac, P. | Russo-Asiatic Bank, Shanghai ... | 1920 |
| Carl, Francis A. | 16 Santiao Hutung, Peking ... | 1906 |
| *Carpenter, G. B. | Shewan Tomes & Co., Yunnan Fu | 1920 |
| Carter, J. C. | Mactavish & Co., Shanghai ... | 1912 |
| Casati, A. | C. M. Customs, Szemao | 1919 |
| Cassels, W. C. | H.B.M. Consulate Gen., Hankow | 1921 |
| Caudron, R. M. | C. P. O., Nanchang, Kiangsi ... | 1920 |
| Challoner, Mrs. G. T. | 224 Avenue du Roi Albert, S'hai | 1921 |
| Chatley, Herbert, D.Sc. | 8 Route Francis Garnier, Shanghai | 1916 |
| Ch'ên Kuo-ch'uan | c/o Wan Chu Garden, Nanking... | 1913 |
| Chieri, V. | Postal Supply Dept., C.P.O., S'hai | 1922 |
| Christiansen, J. P. | G. N. Telegraph Co., Peking... | 1913 |
| Claiborne, Miss Elizabeth | 4 Thibet Road, Shanghai | 1903 |
| Clark, J. D. | Shanghai | 1895 |
| Clark, John W. | Shanghai | 1921 |
| Clark, T. B. | American Consulate, Shanghai ... | 1922 |
| *Clementi, C. | 4 Laurel Road, Wimbledon, London, S.W. | 1905 |
| Clennell, W. J. | British Consulate, Foochow | 1921 |
| Coals, O. R. | British Consulate, Teng Yueh, Yunnan | 1906 |
| Cole, Rev. W. B. | M. E. M. Hinghwa | 1917 |
| Columbia University | New York City, U.S.A. | 1921 |
| Cook, Rev. Thos. | Kwan Hsien, Szechuen | 1921 |
| Cooper, Miss A. B. | 25 Nanking Road, Shanghai | 1921 |
| Commijs, A. J. | Custom House, Shanghai | 1919 |
| Cornell University Library | Ithaca, New York | 1922 |
| Couling, Mrs. S. | 5 Shantung Road, Shanghai | 1916 |
| Couling, Miss | 5 Shantung Road, Shanghai | 1922 |
| *Cousland, Dr. P. B. | 16 Bluff, Yokohama, Japan | 1903 |
| Craig, A. | The University, Manila | 1914 |
| Crofts, Geo. | c/o Geo. Crofts & Co., Tientsin ... | 1921 |
| Crow, C. | 21 Whangpoo Road, Shanghai ... | 1913 |
| Cupeli, M. | Shanghai | 1918 |
| Danner, Mrs. | Shanghai | 1920 |
| Danton, G. H. | Tsing Hua College, Peking | 1918 |
| *Darch, O. W. | c/o A.P.C., Canton | 1922 |
| Davey, W. J. | Shanghai Mercury, Shanghai ... | 1920 |
| *Davidson, R. | c/o Mrs. Frew, 66 Leamington Terrace, Edinburgh | 1914 |
| Davis, Miss Emily | St. Luke's Hospital, Shanghai ... | 1921 |
| Davis, Dr. Noel | Municipal Offices, Shanghai | 1910 |
| Dent, V. | 203 Avenue de Roi Albert, S'hai | 1912 |
| *Deas, Stuart | Butterfield & Swire, Hankow ... | 1919 |
| Denham, Mrs. J. E. | Shanghai | 1919 |
| Dick, L. S. | Collins & Co., Shanghai | 1920 |
| Dingle, Edwin J. | Far Eastern Geographical Estab- lishment, Shanghai | 1917 |

| Name | Address | Year of Election |
|------------------------------------|---|------------------|
| Dingle, Lilian M. | Box 323, B. P. O., Shanghai ... | 1917 |
| Dodson, Miss S. L.... .. | St. Mary's Hall, Jessfield, S'hai | 1917 |
| Dome, Earl | Y.M.C.A., Chengtu | 1920 |
| Donald, William H. | 23 Tsungpu Hutung : East, Peking | 1911 |
| Dorsey, W. Roderick | U.S.A. Consular Service, Florence, Italy | 1911 |
| Douglas, Miss L. | 4 Quinsan Gardens, Shanghai ... | 1922 |
| Dovey, J. W. | Mission Book Co., Shanghai... .. | 1918 |
| Doyle, J. E. | China Press, Shanghai | 1921 |
| Drago, G. D. | 350 Park Avenue, New York ... | 1918 |
| *Drake, Noah F. | Fayetteville, Arkansas | 1911 |
| *Drew, E. B. | Cambridge, Massachusetts | 1882 |
| Du Monceau, Comte L.... .. | Russo-Asiatic Bank, Shanghai ... | 1909 |
| Dumon, F.... .. | Ecole Municipal Francaise S'hai... | 1910 |
| Duncan, A. McL. | C. M. Customs, Shanghai | 1922 |
| Edgar, Rev. J. H. | c/o China Inland Mission, Kwan Hsien | 1910 |
| Edmondston, David C. | Hongkong and Shanghai Bank, 9 Grace Church St., London E.C. | 1917 |
| Edmunds, Dr. C. K. | Canton | 1916 |
| Eliot, Sir Charles, K.C.M.G.... .. | British Embassy, Tokyo | 1913 |
| Ely, John A. | St. John's University, Shanghai ... | 1917 |
| Ely, Mrs. J. A. | St. John's University, Shanghai ... | 1917 |
| Enders, Mrs. Gordon B. | 3 Canton Road, Shanghai | 1922 |
| Engel, Max. M. | 105 Avenue Road, Shanghai | 1911 |
| *Eriksen, A. H. | Telegraph Dept., Ministry of Com- munications, Peking | 1915 |
| Essex Institute, Librarian | Salem, Massachusetts | 1906 |
| Evans, Edward | 2 Quinsan Gardens, Shanghai ... | 1917 |
| Evans, Joseph J. | Evans & Sons, 30 North Szechuen Road, Shanghai | 1916 |
| Exter, Bertus van | Netherlands Harbour Works, Chefoo | 1916 |
| Fardel, H. L. | Municipal School for Boys, S'hai | 1918 |
| Fautereau-Vassel, Mms. P. de ... | | 1921 |
| *Fearn, Mrs. J. B. | 30 Route Pichon, Shanghai | 1911 |
| Ferguson, J. W. H. | Inspectorate General of Customs, Statistical Department, S'hai | 1910 |
| Ferguson, T. T. H. | c/o Mrs. H. E. Ferguson, 4 Addi- son Way, Golders Green, London, N.W. 4 | 1900 |
| Ferrajolo, Capt. R. | Italian Consulate, Shanghai | 1920 |
| Firth, Miss M. | Boone Road Public School, S'hai | 1920 |
| Fischer, Emil, S. | Tientsin | 1894 |
| Fisk, G. W. | Kailan Mining Co., Chingwantao... | 1919 |
| Fitch, George A. | Y.M.C.A., Shanghai | 1921 |
| Fitch, Robert F., D.D. | Hangchow | 1918 |

LIST OF MEMBERS

| Name | Address | Year of Election |
|---|---|------------------|
| Flemons, Sidney | 48, Rue Amiral Bayle, Shanghai... | 1917 |
| Fletcher, W. J. B. | Nam Wu College, Canton | 1916 |
| Fox, Harry H., C.M.G. | British Consulate-General, S'hai | 1907 |
| Frauck, Rev. G. M. | British & Foreign Bible Society, Chengtu | 1922 |
| Freeman, Mrs. Z. S. | Chinese-American Bank of Com- merce, Peking | 1922 |
| Fryer, George B. | 4 Edinburgh Road, Shanghai... | 1901 |
| Gage, Rev. Brownell | Changsha | 1915 |
| Gale, Esson M. | Chinese Salt Rev. Administration, Hankow | 1911 |
| Gardner, H. G. | c/o Hongkong & Shanghai Bank, 9 Gracechurch St., London, E. C. | 1906 |
| Garner, Dr. Emily | Nanking | 1911 |
| *Garritt, Rev. J. C. | S.M.C. Chief Sanitation Chemist, Shanghai | 1907 |
| Gaunt, Percy | C.M.S., Ningpo | 1921 |
| Gaunt, Rev. T. | c/o Dodwell & Co., Hongkong ... | 1922 |
| *Gerken, Chas. | 73 Avenue des Champs Elysées, Paris | 1921 |
| Getty, Miss Alice | Via Kuintino, Salla No. 4, Milano, Italy | 1893 |
| Ghisi, E. | 12 Weihaiwei Road, Shanghai ... | 1915 |
| Gibson, H. E. | C. M. Customs, Ningpo | 1918 |
| Gilchrist, Edward | P. & T. Times, Peking | 1920 |
| Giles, W. R. | c/o British Cigarette Co., Hankow | 1915 |
| Gilliam, J. | American Legation, Peking | 1911 |
| Gills, Captain J. H. | Nanking | 1919 |
| Gish, Rev. E. P. | Municipal Offices, Shanghai | 1909 |
| Godfrey, C. H. | 21 Yuen Ming Yuen Road, S'hai | 1919 |
| Goldring, P. W. | 231 Palace Hotel, Shanghai | 1920 |
| Goldring, Mrs. P. W. | 11 Wayside Road, Shanghai | 1916 |
| Grant, J. B. | St. John's University, Shanghai ... | 1918 |
| Graves, Bp. F. R., D.D. | 20 Nanking Road, Shanghai | 1919 |
| Gray, C. Norman | Senior Naval Office, Shanghai ... | 1922 |
| Green, Paymaster Commr., E. T. M., R.N. | Chinese Maritime Customs, S'hai | 1918 |
| Grierson, R. C. | Shanghai | 1898 |
| *Grodtmann, Johans | Ecole Municipale Française, 247 Avenue Joffre, Shanghai | 1922 |
| Grosbois, Ch., M.A. | Bureau of Russian Affairs, S'hai | 1912 |
| Grosse, V. | British Chamber of Commerce, Shanghai | 1915 |
| Gull, E. Manico | 9 Rue Pommera (XVI), Paris ... | 1908 |
| *Gunsberg, Baron G. de | Directorate General of Posts, Peking | 1913 |
| Gwynne, T. H. | Hongkong | 1919 |

| Name | Address | Year of Election |
|---------------------------------|---|------------------|
| *Hackmann, H. | | 1903 |
| Hail, Rev. W. J., PH.D. | Yale-in-China, Changsha... .. | 1922 |
| *Hall, J. C. | 49 Broadhurst Gardens, Hampstead, N.W. | 1888 |
| Hamilton, A. de C. | 7A Kiangse Road, Shanghai | 1918 |
| Hammond, Miss Louisa | A.C.M., Wusih | 1917 |
| Hampson, Cyril W. | "Shipping and Engineering," S'hai | 1920 |
| Hancock, H. T. | Standard Oil Co., Shanghai | 1914 |
| Hancox, Lieut. H. R., R.N. | British Legation, Peking | 1922 |
| Handley-Derry, H. F. | British Consulate, Tientsin | 1903 |
| *Harding, H. I. | British Legation, Peking | 1914 |
| Hardy, Dr. W. M. | Batang, via Atentze, West China... | 1912 |
| Harpur, C. | Municipal Offices, Shanghai | 1901 |
| Harvey, C. W. | 20 Museum Road, Shanghai | 1922 |
| Hawkings, W. J. | 30 Gordon Road, Shanghai | 1920 |
| Heacock, Mrs. H. E. | 537A Avenue Joffre, Shanghai | 1921 |
| Healey, Leonard C. | S.M.C. Polytechnic School, S'hai | 1913 |
| Heaton-Smith, E. B. | Gibb, Livingston & Co., Shanghai | 1922 |
| Heeren, Rev. J. J., PH.D. | Shantung Christian University, Tsinan | 1915 |
| Heidenstam, H. von | 6 Kiukiang Road, Shanghai | 1916 |
| Helde, G. G. | Y.M.C.A., Chengtu | 1922 |
| Hemingway, B. | Asiatic Petroleum Co., Hangchow | 1922 |
| Henke, Frederick G., PH.D. | 643 William Street, Meadville, Pennsylvania, U.S.A. | 1912 |
| Hers, Joseph | Lunghai Railway, Peking | 1907 |
| Hickling, N. W. | 134 Weihaiwei Road, Shanghai ... | 1922 |
| *Hilderbrandt, Adolf | Berlin-Lichterfeld West, Albrechtstr 8A | 1907 |
| Hill, Dr. R. A. P. | 1 Honan Road, Shanghai | 1921 |
| Hiltner, Mrs. W. G. | 114 Dixwell Road, Shanghai | 1920 |
| Hinckley, F. E., PH.D. | Merchants Exchange Building, San Francisco | 1907 |
| *Hippisley, A. E. | Hongkong and Shanghai Bank, London | 1876 |
| Hobson, H. E. | Marnwood Hall, Iron Bridge, Shropshire, England | 1868 |
| Hodges, Mrs. F. E. | 69 Route de Say Zoong, Shanghai | 1915 |
| *Hodous, Rev. L. | Kennedy School, Hertford Conn., U.S.A. | 1913 |
| Hoettler, A. | 6 Siking Road (2nd floor) Shanghai | 1910 |
| Houghton, Charles | S.M.C. Health Office, Shanghai ... | 1908 |
| Howell, E. B. | Native Customs, Tientsin | 1909 |
| Hudson, Mrs. Alfred | Ningpo | 1909 |
| Hughes, A. J. | China United Assurance Society, Shanghai | 1909 |
| Hughes, E. R. | London Mission, Tingchow, via Amoy | 1918 |
| Hughes, W. E. | A.P.C., Zakhkow, Hangchow | 1921 |
| Hume, E. H., M.D. | 36 Lincoln St. Newhaven, Conn., U.S.A. | 1922 |
| Hummel, A. W. | Fenchow, Shansi | 1919 |

| Name | Address | Year of Election |
|--------------------------------|---|------------------|
| Hunter, Miss | Public School for Girls, Shanghai | 1920 |
| Huston, J. C. | American Legation, Hankow... .. | 1917 |
| Hutson, Rev. J. | c/o China Inland Mission, Chengtu | 1914 |
| Hynd, R. R. | Hongkong & Shanghai Bank, S'hai | 1913 |
| Hynes, A. C. | Hongkong & Shanghai Bank, S'hai | 1919 |
| India Office Library | Whitehall, London, S.W. | 1922 |
| Irvine, Miss Elizabeth... .. | 39 Arsenal Road, St. Catherine's Bridge, Shanghai | 1910 |
| Irving, D. A. | Asiatic Petroleum Co., Chungking | 1913 |
| Irwine, Mrs. H. G. | 85 Yu Yuen Road, Shanghai... .. | 1920 |
| Islef, J. P. | G. N. Telegraph Co., Shanghai ... | 1917 |
| Jacobs, J. E. | American Consulate, Shanghai ... | 1922 |
| Jamieson, J. W. | H.B.M. Consul-General, Canton... | 1888 |
| Jenks, Prof. J. W. | 13 Astor Place, New York | 1903 |
| Jensen, C. A. | G. N. Telegraph Co., Tientsin ... | 1918 |
| Johnson, N. T. | c/o Department of State, Washington, D.C. | 1912 |
| Johnston, R. F. | Peking | 1907 |
| Joly, P. B. | c/o Mrs. H. B. Joly, Legation Street, Seoul. | 1913 |
| Jones, G. S. | Brunner Mond & Co., Shanghai ... | 1920 |
| Jong, Th. de J. | Netherlands Legation, Peking ... | 1914 |
| Jordan, Dr. J. H., M.C. | Health Office, Shanghai | 1922 |
| Jorgensen, O. | G. N. Telegraph Co., Copenhagen, Denmark | 1913 |
| Joseph, S. M. | Palace Hotel, Shanghai | 1920 |
| *Jost, A. | Sulzer, Rudolf & Co., Shanghai ... | 1912 |
| Justesen, M. L. | c/o L. V. Lang, 8 French Bund, Shanghai | 1913 |
| Karlbeck, O. | Peng Pu | 1914 |
| Kashiwada, T. | 112 Range Road, Shanghai | 1918 |
| Kellogg, C. R. | Foochow | 1919 |
| Kemp, G. S. Foster | Public School for Chinese, S'hai | 1908 |
| Kennett, W. B. | British Cigarette Co., Shanghai ... | 1918 |
| Kent, A. S. | c/o Chinese Post Office, Moukden | 1913 |
| *Kern, D. S. | C.M.M. Chengtu, Szechuen | 1912 |
| Kilner, E. | 1 Range Road, Shanghai | 1909 |
| King, Dr. G. E. | Lanchow, Kansu | 1919 |
| King, Louis M. | H.B.M.'s Consulate, Chengtu ... | 1911 |
| *Kliene, Charles | C. M. Customs, Shanghai | 1916 |
| Klubien, J. | Inspectorate General of Customs, Peking | 1913 |
| Kopp, E. C. | Shanghai | 1919 |
| *Krebs, E. | | 1895 |
| Krisel, A. | 1b Jinkee Road, Shanghai | 1914 |

| Name | Address | Year of Election |
|--------------------------------|--|------------------|
| Kulp, D. H. | "Representing Brown University School of Sociology" Shanghai College, Shanghai | 1915 |
| *Kunisawa Shimbei | 270 Hyakunin-cho, Ohkubo, Tokyo | 1917 |
| Lacy, Rev. Dr. W. H. | 10 Woosung Road, Shanghai... | 1909 |
| Laforest, L. | 60 Avenue Dubail, Shanghai | 1917 |
| Lake, Capt. P. M. B. | c/o Jardine, Matheson & Co., S'hai | 1916 |
| Lanning, V. H. | c/o Jardine, Matheson & Co., S'hai | 1916 |
| *Latourette, K. S. | 1126 Yale Station, New Heaven, Conn., U.S.A. | 1912 |
| *Laufer, Dr. Berthold | Field Museum of National History, Chicago | 1901 |
| *Laver, Capt. H. E. | Head Street, Colchester, Essex ... | 1912 |
| Leach, W. A. B. | Municipal Offices, Shanghai | 1914 |
| Leavens, D. H. | 202 Broadway, Norwich, Conn., U.S.A. | 1917 |
| *Leavenworth, Chas. S. | 71 Howe St., New Heaven, Conn. U.S.A. | 1901 |
| Leete, W. Rockwell | Fenchow, Shansi | 1918 |
| *Leslie, T. | Elmers Glen, Salfords, Horley, England | 1914 |
| Lester, Miss E. S. | McTyeire School, Hankow Road, Shanghai | 1919 |
| Lewis, D. J. | 6 Young Allen Terrace, Shanghai... | 1920 |
| Lewis, Mrs. D. J. | 6 Young Allen Terrace, Shanghai... | 1920 |
| Lewis, S. H. | Secretariat, S.M.C. | 1921 |
| Liddell, C. Oswald | Shirenewton Hall, near Chepstow, Monmouthshire | 1908 |
| Linde, Mrs. de | Arnhold Brothers, Shanghai... .. | 1922 |
| *Lindsay, Dr. A. W. | Chengt'u, Szechuen | 1910 |
| *Little, Edward S. | 30 Gordon Road, Shanghai | 1910 |
| Liversidge, Rev. H. | China Inland Mission, Kaiting ... | 1922 |
| Loehr, A. G. | 25 Nanking Road, Shanghai... .. | 1916 |
| Lockwood, W. W. | 120 Szechuen Road, Shanghai ... | 1913 |
| Lofting, J. H. | Trollope & Colls, 56 Szechuen Road, Shanghai | 1922 |
| Lord, Rev. R. D. | Yenchowfu, Shantung | 1918 |
| Lord, Samuel | 8B Kiukiang Road, Shanghai... .. | 1921 |
| Lowson, A. B. | Hongkong and Shanghai Bank, Shanghai | 1922 |
| Lucas, S. E. | Chartered Bank, Peking | 1906 |
| Lumsden, Miss, F.R.G.S. | c/o Thos. Cook & Co., Peking ... | 1922 |
| Luthy, Charles | 62 Kiangse Road, Shanghai | 1910 |
| *Luthy, Emil | 62 Kiangse Road, Shanghai | 1917 |
| *Lyall, Leonard A. | C. M. Customs, Shanghai | 1892 |
| Lyon, Dr. D. W. | 347 Madison Avenue, New York ... | 1919 |
| Mabee, Fred C. | Shanghai College, Shanghai | 1912 |
| Macbeth, Miss A. | 9 Wang Ka Shaw Gardens, S'hai | 1915 |
| MacDonell, A. M. | c/o P. O. Box 825, American Postal Agency, Shanghai | 1918 |

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|-------------------------------------|--|------------------|
| MacGillivray, Rev. Dr. Donald | 143 N. Szechuen Road, Shanghai | 1908 |
| Mackinlay, Miss M. F. | 6 Annam Road, Shanghai | 1921 |
| Macleod, Dr. N. | 453 Great Western Road, Shanghai | 1915 |
| MacNair, H. F. M.A. | St. John's University, Shanghai ... | 1920 |
| Maguire, Mrs. C. E. | 413 Avenue Joffre, Shanghai | 1921 |
| McNulty, Rev. Henry A. | A. C. Mission, Soochow | 1918 |
| Macoun, J. H. | C. M. Customs, Nanking | 1894 |
| McRae, J. D. | Shantung Christian University, Tsinanfu, Shantung | 1910 |
| Main, Dr. Duncan | Hangchow | 1900 |
| Mamet, O. | Engineer-in-Chief, Mentowkow Mines Mentowkow, Chihli | 1922 |
| *Marsh, Dr. E. L. | 14 Kiukiang Road, Shanghai... .. | 1908 |
| Marshall, R. Calder | 32A Nanking Road, Shanghai | 1908 |
| Marsoulies, A. du Pac de | 67 Route Vallon, Shanghai | 1917 |
| Martin, C. H. | Russo-Asiatic Bank, Shanghai | 1918 |
| Martin, Mrs. W. A. | Bridge House, Nanking | 1916 |
| Martinella, A. | Actg. Sec. Italian Municipality, Tientsin | 1921 |
| *Mason, Isaac, F.R.G.S. | 143 N. Szechuen Road, Shanghai | 1916 |
| Mather, B. | Yung Ching, Peking | 1918 |
| Maxwell, Dr. J. Preston | E.P.M., Yungchun Fu | 1917 |
| Maybon, Charles B. | 1195 Rue Lafayette, Shanghai | 1911 |
| *Mayers, Frederick J., F.R.G.S. ... | C. M. Customs, Chinkiang | 1917 |
| Mayers, Sidney F. | The British and Chinese Corpora- tion, Ltd., Peking | 1907 |
| McCabe, P. J. | C. P. O. Box No. 1, Nankang, Harbin | 1922 |
| McEuen, K. J. | Municipal Offices, Shanghai | 1908 |
| McFarlane, Rev. A. J. | 48 Broadway, Westminster, London, S.W.1. | 1915 |
| McInnes, Miss G. | c/o Hongkong & Shanghai Bank, London | 1913 |
| McNeill, Mrs. Duncan | The Chestnut, Tangbourne, England | 1915 |
| Mead, E. W. | H.B.M. Consulate Genl., Shanghai | 1916 |
| *Meister, O., C.E., M.E. | c/o Sulzer Bros., 4 Avenue Edward VII, Shanghai | 1922 |
| Mell, Rudolf | 41 Rueckertstrasse, Berlin-Steglitz | 1911 |
| *Melnikoff, D. M. | Litvinoff & Co., Hankow | 1919 |
| Mencarini, J. | 2 Canton Road, Shanghai | 1884 |
| Mengel, E. | Supt. Chinese Telegraphs, Yun- nanfu | 1913 |
| Mennie, D. | A. S. Watson & Co., Shanghai ... | 1916 |
| Menzies, Rev. J. M. | Changte, Ho | 1914 |
| *Merian, J. R. A. | 1c Kiukiang Road, Shanghai | 1921 |
| Merriman, Mrs. W. L. | 20 Ferry Road, Shanghai | 1910 |
| Merrins, Dr. E. M. | St. John's University, Shanghai... | 1916 |
| Mesny, H. P. | c/o H. & W. Greer, Ltd., 20 Kiu- kiang Road, Shanghai | 1911 |
| Meyer, H. Fuge | Whangpoo Conservancy, Shanghai | 1920 |
| Mills, E. W. P. | H.B.M. Consulate, Nanking... .. | 1920 |
| Miskin, Stanley C. | Asiatic Petroleum Co., Hankow ... | 1913 |

| Name | Address | Year of Election |
|---------------------------------|---|------------------|
| Mitchell, Miss E. E. | 35 Dixwell Road, Shanghai | 1921 |
| Molines, Edouard | Credit Foncier d'Extreme-Orient, Hankow | 1920 |
| Monginer, Miss M. M. | A.P.M., Kachek, Hainan | 1916 |
| *Moore, Dr. A. | | 1913 |
| *Morgan, Rev. Evan | 143 N. Szechuen Road, Shanghai | 1909 |
| Morris, Dr. H. H. | St. Luke's Hospital, Shanghai ... | 1914 |
| Morriss, H. E. | 118 Route Père Robert, Shanghai | 1919 |
| *Morse, C. J. | 1825 Asbury Avenue, Evanston, Illinois | 1901 |
| Mortimore, Mrs. W., M.D. | Canadian Methodist Mission, Peng Hsien, W. China | 1922 |
| Mortensen, Rev. Ralph | Kikungshan, Honan | 1920 |
| Mostaert, E. | Lung Hai Railway, Chengchow, Honan | 1922 |
| Moule, Rev. A. C. | Tsungpington Vicarage, Cambridge | 1902 |
| Mullett, Dr. H. J. | Dental Hospital, Chengfu | 1921 |
| Mulock, Capt. G., R.N. | 15 Route Pottier, Shanghai | 1922 |
| Munn, Rev. Wm. | c/o C.M.S. Salisbury Square, London, E.C.4. | 1922 |
| Munro-Faure, P. H. | c/o A. P. C., Hangchow | 1921 |
| Münter, L. S. | G. N. Telegraph Co., Peking ... | 1910 |
| Munthe, Mrs. | 43 Hsiao T'ien Shui Ching Hu- tung, Peking | 1922 |
| Murphine, Shepley | 2 Kiukiang Road, Shanghai | 1921 |
| Murphy, Henry K. | 1 Canton Road, Shanghai | 1921 |
| Murphy, Mrs. H. K. | 1 Canton Road, Shanghai | 1921 |
| Mysore University | Mysore, India | 1920 |
| Nance, Prof. W. B. | Soochow University, Soochow ... | 1922 |
| Neild, Dr. F. M. | 3A Peking Road, Shanghai | 1916 |
| Newcomb, Capt. Frank | c/o Billiters Square, London, E.C. | 1917 |
| Newman, Kenneth | 3G Peking Road, Shanghai | 1921 |
| Nicholson, William | Butterfield & Swire, Hongkong ... | 1919 |
| *Nielsen, Albert | c/o De-No-Fa, Christiania, Norway | 1894 |
| Nordquist, O. | C. P. O., Nanking | 1920 |
| Norman, H. C. | The China Press, Shanghai | 1912 |
| Nystrom, E. T. | Shansi University, Taiyuanfu ... | 1920 |
| Oakes, W. L. | W. M. S., Changsha | 1919 |
| *O'Brien-Butler, P. E. | c/o Foreign Office, London | 1886 |
| *Ohlmer, E. | | 1885 |
| Ollerton, J. E. | 217 Bubbling Well Road, Shanghai | 1916 |
| Ottewill, H. A. | c/o H.B.M. Consulate General, Shanghai | 1913 |
| Ouskouli, M. H. A. | Shanghai | 1917 |
| Paddock, Rev. B. H. | Yen Ping Fu, Foochow | 1916 |
| Pade, K. F. | G. N. Telegraph Co., Shanghai ... | 1920 |

| Name | Address | Year of Election |
|---|---|------------------|
| Pagh, E. K. | G. N. Telegraph Co., Shanghai ... | 1908 |
| *Palmer, W. M. | Salt Gabelle, Peking ... | 1914 |
| Papini, E. | | 1916 |
| Parker, Rev. Dr. A. P. | Anglo-Chinese College, 19 Quinsan Road, Shanghai | 1901 |
| Parsons, E. E. | 12 Hankow Road, Shanghai ... | 1916 |
| Pasquier, G. A. | North China Daily News, S'hai... | 1922 |
| Passikides, C. J. | S.M.C. Finance Dept., Shanghai | 1921 |
| *Paterson, J. J. | Jardine Mathieson & Co., Shanghai | 1922 |
| Patrick, Dr. H. C. | 22 Whangpoo Road, Shanghai ... | 1912 |
| Pearson, C. Dearne | 69 Kiangse Road, Shanghai ... | 1908 |
| Peet, Gilbert E. | 6 Jinkee Road, Shanghai ... | 1918 |
| Peffer, Nathaniel | c/o Pacific Bank, 57th St. and Madison Avenue, New York | 1918 |
| *Peiyang University Librarian ... | Tientsin ... | 1911 |
| Penfold, F. G. | 32A Nanking Road, Shanghai ... | 1916 |
| Perkins, M. F. | American Consulate, Shanghai ... | 1914 |
| Perrin, Mrs. K. M. | 202 Bubbling Well Road, Shanghai | 1922 |
| Petersen, I. C. V. | 2 Hsi Tang Tse Hu Tung, Peking | 1906 |
| *Pettus, W. B. | Y.M.C.A., Peking ... | 1915 |
| Pfisher, Dr. M., M.R.C.P., L.R.C.P. ... | 152 Sinza Road, Shanghai ... | 1922 |
| Phillips, H., O.B.E. | British Consulate, Newchwang ... | 1912 |
| *Plancy, V. Collin de ... | 10 Square du Croisic, Paris XVc... | 1877 |
| Platt, Robert ... | Chicago University, Chicago, Ill. | 1917 |
| Polevoy, S. A. | 20 Wogack Road, Tientsin ... | 1917 |
| Polk, Dr. Margaret. H. | 110 Range Road, Shanghai ... | 1915 |
| Porterfield, W. M. | St. John's University, Shanghai... | 1920 |
| Pott, Rev. Dr. F. L. Hawks ... | St. John's University, Shanghai... | 1913 |
| Pott, W. S. A. | St. John's University, Shanghai... | 1914 |
| Pousty, F. E. | Ningpo ... | 1915 |
| Powell, J. B. | The Weekly Review, 4 Avenue Edward VII, Shanghai | 1918 |
| Pratt, J. T., C.M.G. | c/o Foreign Office, London ... | 1909 |
| Pratt, R. S. | H.B.M.'s Consulate, Amoy ... | 1921 |
| Prentice, John ... | 47 Yangtszepoo Road, Shanghai ... | 1885 |
| Price, Mrs. Maurice ... | c/o Prof. M. Price, University of Chicago, Ill., U.S.A. | 1919 |
| *Pye, Rev. Watts O. | Fenchow, Shansi ... | 1917 |
| Quien, F. C. | Netherlands Harbor Works, Peking | 1913 |
| Quin, Mrs. J. | 3 Kiukiang Road, Shanghai ... | 1916 |
| Raaschou, T. | Danish Consul-General, Shanghai | 1912 |
| Raeburn, P. D. | C. M. Customs, Shanghai ... | 1916 |
| Ramondino, F. | Italian Consulate Genl., Shanghai | 1922 |
| Rankin, C. W. | 18 Quinsan Road, Shanghai ... | 1915 |
| Rees, Rev. Dr. W. Hopkyn ... | 48 Broadway, Westminster, London, S.W.1. | 1914 |
| Reinsch, Dr. Paul ... | | 1916 |
| Reiss, Mrs. A. | Shanghai ... | 1921 |

| Name | Address | Year of Election |
|-----------------------------------|--|------------------|
| Richert, G. | c/o A. B. Vattenbyggnadsbyran, Stockholm | 1920 |
| Ritchie, W. W. | Postal Commissioner, Harbin ... | 1907 |
| Roberts, D. | St. John's University, Shanghai... | 1916 |
| Roots, Rt. Rev. L. H. | American Church Mission, Hankow | 1916 |
| Ros, G. | Italian Consulate-Gen., Hankow ... | 1908 |
| Rossi, Comm. G. de' | Italian Consulate-Gen., Shanghai... | 1920 |
| Rowbotham, A. H. | Tsing Hua College, Peking ... | 1920 |
| Rowe, E. S. B. | Municipal Offices, Shanghai ... | 1907 |
| Sadoine, Baron A. | C. M. Customs, Hankow ... | 1922 |
| *Sahara, T. | 6 Miller Road, Shanghai... .. | 1908 |
| Saint-Hubert, G. de | Lung Hai Railway, Chengchow, Honan | 1922 |
| Sammons, Hon. T. | c/o American Consul-Gen., S'hai | 1915 |
| Sanders, Arthur H. | | 1917 |
| Sandor, H. | American Szechuen Bank, Chungking | 1922 |
| Sargent, G. T. | Andersen, Meyer & Co. | 1917 |
| *Sarkar, Prof. B. K. | c/o Bangiya Sahitya Parishat, 243, Upper Circular Road, Calcutta | 1915 |
| Sawdon, E. W. | Friends' High School, Chungking, Szechuen | 1916 |
| Sawyer, J. B. | U.S. Consulate-Gen., Shanghai ... | 1920 |
| *Segalen, Dr. Victor | 5 Cite d'Antin, Brest, France ... | 1917 |
| Shantung Christian University ... | Tientsin | 1922 |
| *Shaw, Norman | C. M. Customs, Canton | 1912 |
| Shearstone, T. W. | 28 Szechuen Road, Shanghai... .. | 1918 |
| *Shelton, Dr. A. L. | Batang, via Tachienlu, Sze. | 1918 |
| Shengle, J. C. | 23 Ferry Road, Shanghai | 1905 |
| Shioya, T. | Bank of Chosen, Shanghai | 1922 |
| Shipley, J. A. G. | 10 Woosung Road, Shanghai... .. | 1911 |
| Shu, Dr. H. J. | Chinese Customs, Hankow | 1921 |
| Silsby, Rev. J. A. | Presbyterian Mission, South Gate, Shanghai | 1911 |
| Simpson, B. Lenox | Peking | 1907 |
| Sirén, Prof. O. | Stockholm University | 1922 |
| Sites, F. R. | U.S. Steel Product Co., Shanghai | 1916 |
| Skinner, Dr. A. H. | Hankow | 1919 |
| Skvortzow, B. W. | 67 Poshtovaya St., Harbin | 1918 |
| Smallbones, J. A. | S.M.C. Electricity Dept., Shanghai | 1913 |
| Smith, J. Langford | c/o H.B.M. Consulate Gen. S'hai | 1908 |
| Southcott, Mrs. | Wei-hai-wei | 1919 |
| Spiker, Clarence J. | American Legation, Peking | 1918 |
| Staheyeff, Miss T. | 25 Carter Road, Shanghai | 1921 |
| *Stanley, Dr. A. | Municipal Offices, Shanghai | 1925 |
| Stapleton-Cotton, W. V. | Directorate General of Posts, Peking | 1916 |
| Stedeford, E. T. A. | Blyth Hospital, Wenchow | 1919 |
| Steptoe, H. N. | H.B.M. Consulate-Gen., Chengtu... | 1920 |
| Stewart, Rev. J. L. | Union University, Chengtu | 1916 |
| Stocker, E. C. | 64 Avenue Dubail, Shanghai | 1921 |

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| Name | Address | Year of Election |
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| Stockton, G. C. | 155b Dixwell Road, Shanghai ... | 1914 |
| Strehlneck, E. A. | 45 Haskell Road, Shanghai ... | 1909 |
| Stursberg, W. A. | Chinese Postal Service, Kaifeng, Honan | 1919 |
| South Manchuria Railway Co. Library | Dairen ... | 1910 |
| Suga, Capt. T. | N. K. K., Shanghai... | 1919 |
| Summerskill, Miss E. R. | Victoria Nursing Home, Shanghai | 1921 |
| Sykes, E. A. | Shanghai ... | 1909 |
| Symons, C. J. F. Dean | The Deanery, Shanghai ... | 1921 |
| Tachibana, M. | 1062 Higashi-Nakano, Tokyo ... | 1881 |
| Talbot, R. M. | | 1915 |
| Tanner, Paul von | C. M. Customs, Swatow... | 1885 |
| Taylor, A. Ll | Arts & Crafts, Shanghai... | 1915 |
| *Taylor, C. H. Brewitt | Cathay, Earlsferry, Scotland ... | 1885 |
| Taylor, W. H. | St. John's University, Shanghai... | 1922 |
| Teesdale, J. H. | 36 Peking Road, Shanghai ... | 1916 |
| Tenney, Dr. C. D. | American Legation, Peking ... | 1913 |
| Thellefsen, E. S. | G. N. Telegraph Co., Shanghai | 1913 |
| Thomas, J. A. T. | Shanghai ... | 1890 |
| Throop, M. H. | St. John's University, Shanghai... | 1912 |
| Ting I-hsien | C. M. Customs, Shanghai ... | 1902 |
| Tirzon, Pablo | c/o Intelligence Dept., S.M.C., Police Headquarters, Shanghai | 1922 |
| Toller, W. Stark | H.B.M. Consulate-Gen., Shanghai | 1907 |
| *Tochtermann, Karl | | 1900 |
| *Torrance, Rev. Thos. | C. I. M., Kwan Hsien ... | 1922 |
| Touche, J. D. la | C. M. Customs, Mêng Tze, Yunnan | 1911 |
| *Trollope, Rt. Rev. Bishop M.N. | Seoul, Korea ... | 1911 |
| Tucker, G. E. | Shanghai ... | 1915 |
| Tucker, Mrs. G. E. | Shanghai ... | 1915 |
| Turner, Skinner, Judge | British Supreme Court for China, Shanghai | 1916 |
| Twentyman, J. R. | 24 Yuenmingyuen Road, Shanghai | 1894 |
| Tylor, W. F. | Peking ... | 1915 |
| Unwin, F. S. | The Angela, Victoria B. C. Canada | 1914 |
| Van Corback, T. B. | 308 Avenue Joffre, Shanghai... | 1913 |
| Van der Woude, R. | | 1915 |
| Vauthier, Georges | | 1921 |
| Verbert, L. | | 1913 |
| Veryard, Robert K. | Y.M.C.A., Changsha ... | 1917 |
| Vizenzinovitch, Mrs. V. | 1 Kiangwan Road, Shanghai... | 1914 |

| Name | Address | Year of Election |
|---|--|------------------|
| Wade, R. H. R. | C. M. Customs, Tientsin... .. | 1918 |
| Waller, A. J. | Kelly & Walsh, Ltd., Shanghai ... | 1916 |
| Wang Chung-hui, Dr. | Peking | 1913 |
| Ware, Miss Alice | 20 Kwen Ming Road, Shanghai ... | 1918 |
| Warren, Rev. G. G. | Wesleyan Mission, Changsha ... | 1909 |
| Washbrook, H. G. | 6 Shih Ta Jen Hu t'ung, Peking... | 1908 |
| *Watson, Dr. P. T. | Fenchow, Shansi | 1920 |
| Weatherall, M. E. | 52 Ta Fang-chia Hu t'ung, Peking | 1919 |
| Webb, Mrs. C. H. | 21 Studley Avenue, Shanghai ... | 1919 |
| Webster, Rev. James | Wesleyan Mission, Ping Kiang, Hunan | 1911 |
| Werner, E. T. C. | 3 Tung Huang Ch'eng Kên, Hou Mên Wei, Peking | 1915 |
| Westbrook, E. J. | Asiatic Petroleum Co., Shanghai | 1916 |
| Wheeler, Rev. W. R. | A.P.M., Hangchow | 1920 |
| White, Rev. H. W. | Yencheng, Kiangsu | 1915 |
| White, Miss Laura M. | 30 Kinnear Road, Shanghai | 1916 |
| White, Rt. Rev. Wm. C. | Anglican Bishop of Honan, Kai- fengfu | 1913 |
| Whitehead, Miss Edith... .. | 1 Tatung Road, Shanghai | 1921 |
| Wilde, Mrs. H. R. | 20 Ferry Road, Shanghai | 1915 |
| Wilden, H. A. | French Consulate-Gen., Shanghai | 1917 |
| Wilhelm, Rev. Dr. Richard | Tsingtau | 1910 |
| Wilkinson, Rev. A. H.... .. | Rusholme Rectory Manchester ... | 1922 |
| Wilkinson, E. S. | P.O. Box, No. 41, Yokohama ... | 1911 |
| Wilkinson, F. E., C.M.G. | British Consulate-Gen., Mukden... | 1909 |
| Wilkinson, H. P. | c/o Sir H. S. Wilkinson, Moneys- banere, Tohermore Co., Derry, Ireland | 1909 |
| *Williams, C. A. S. | C. M. Customs, Wenchow, Che- kiang | 1919 |
| Williams, Capt. C. C. | c/o Butterfield & Swire, Shanghai | 1918 |
| Wilbur, Mrs. H. A. | 124 Dixwell Road, Shanghai | 1920 |
| Wilson, A. R. D. | Yangtsze Insurance Assn., S'hai | 1921 |
| Wilson, G. L. | Palmer & Turner, 4 The Bund Shanghai | 1921 |
| Wilson, Mrs. Geo. N. | c/o A.P.C., The Bund, Shanghai | 1921 |
| Wilson, R. E. | 6 Jinkee Road, Shanghai | 1918 |
| Witt, Miss E. N. | 16 Queensborough Terr., Hyde Park, London, W. | 1912 |
| Woets, J. | Credit foncier d'Extreme-Orient, Peking | 1919 |
| Wood, A. G. | Gibb, Livingston & Co., Shanghai | 1879 |
| Wood, Mrs. Edwin | 19 Medhurst Road, Shanghai ... | 1921 |
| *Woodward, A. M. Tracy, F.R.G.S., F.R.N.S. | C.P.O. Box, No. 80, Shanghai ... | 1921 |
| Wright, Rev. H. K. | 143 North Szechuen Rd., Shanghai | 1919 |
| *Wright, S. F. | c/o C. M. Customs, Peking | 1916 |
| *Wu Lien-teh, Dr. | Plague Prevention Service, Harbin | 1913 |
| Wu Ting-fang, Dr. | 3 Gordon Road, Shanghai | 1913 |

LIST OF MEMBERS

| Name | Address | Year of Election |
|--|--|------------------|
| Yates, Smith | 8 Nanking Road, Shanghai | 1920 |
| Yokoyama, R. | Tokyo Koshinjo Merceantile Agency, Shanghai | 1918 |
| Young, R. C. | Municipal Offices, Shanghai | 1912 |
| Zwemer, Rev. Samuel M., D.D, F.R.G.S. | 37, Sh. Manakh, Cairo | 1917 |

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| | |
|------------------------------|-----|
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| Corresponding Members | 3 |
| Life Members | 79 |
| Ordinary Members | 482 |
| Total | 581 |

| | |
|------------------------------------|-----|
| Residing at Shanghai | 294 |
| Residing elsewhere in China... .. | 188 |
| Residing in other countries | 99 |
| Total | 581 |



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